MOTOR BOATING

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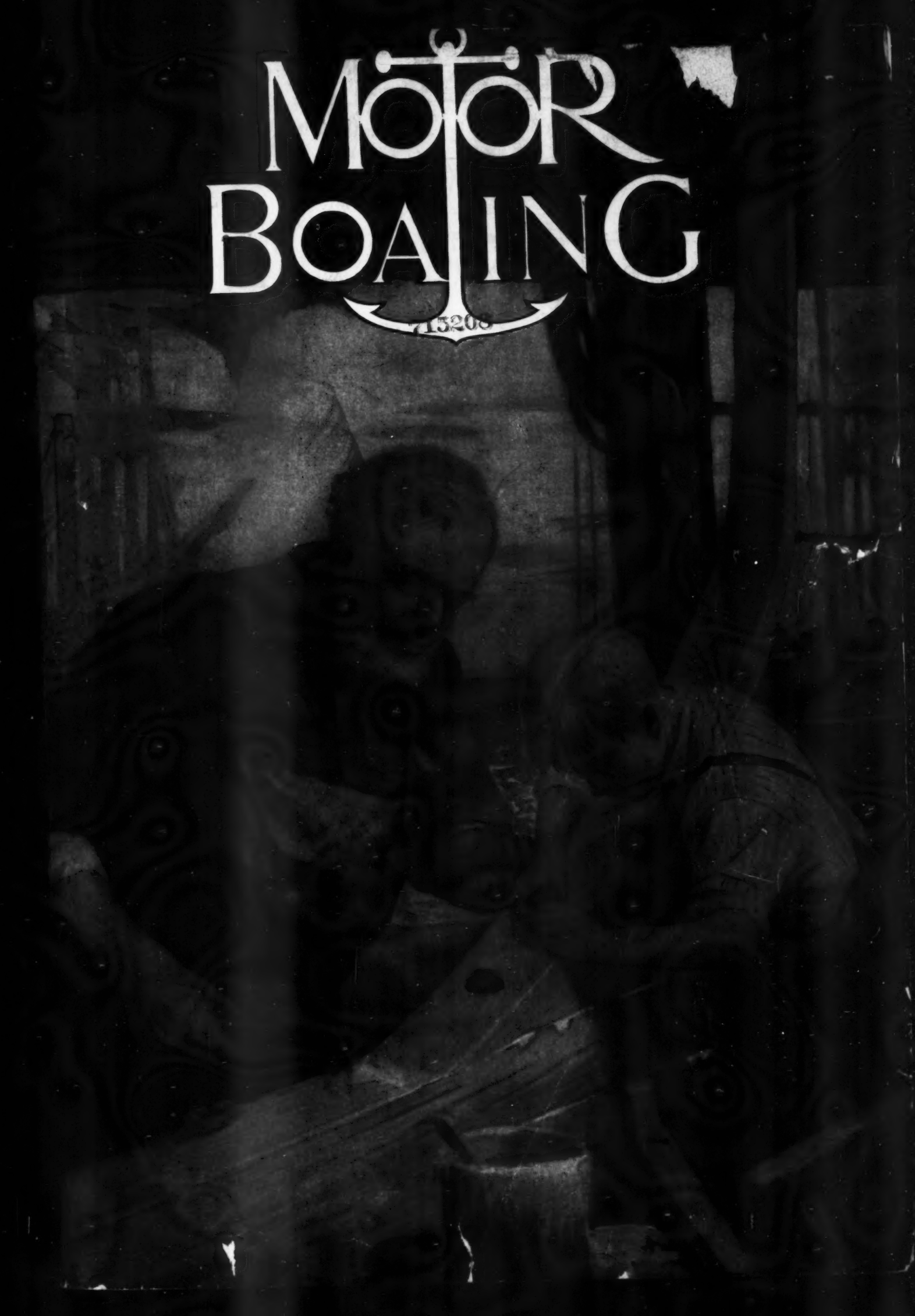

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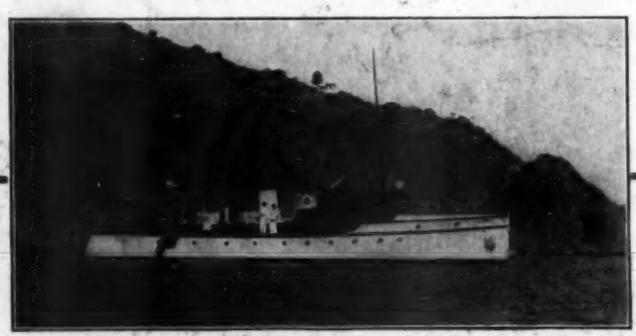

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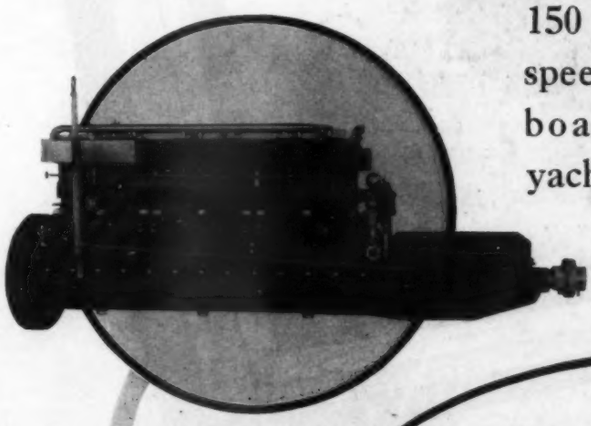
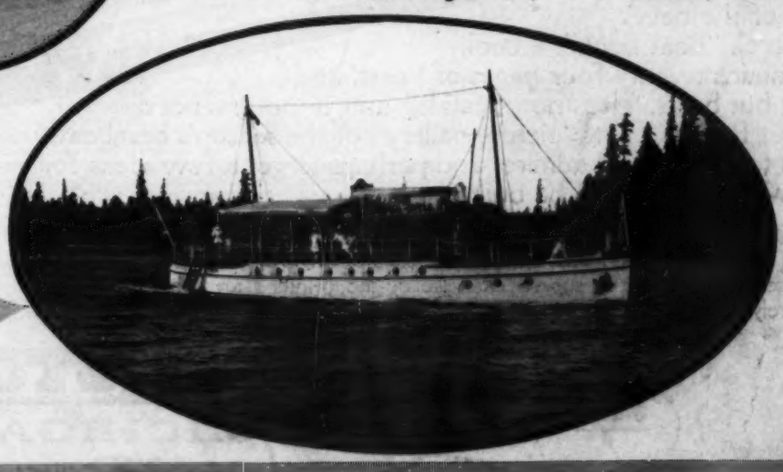
Remember Buffalo engines are built in sizes from 3 to 150 H.P.—high speed, medium speed and slow speed—for work boats, speed boats, launches, yachts and cruisers of all kinds.



The Buffalo Book is free. Shall we send it?

BUFFALO GASOLENE MOTOR CO.

1274-1286 Niagara St., ∴ Buffalo, N. Y.



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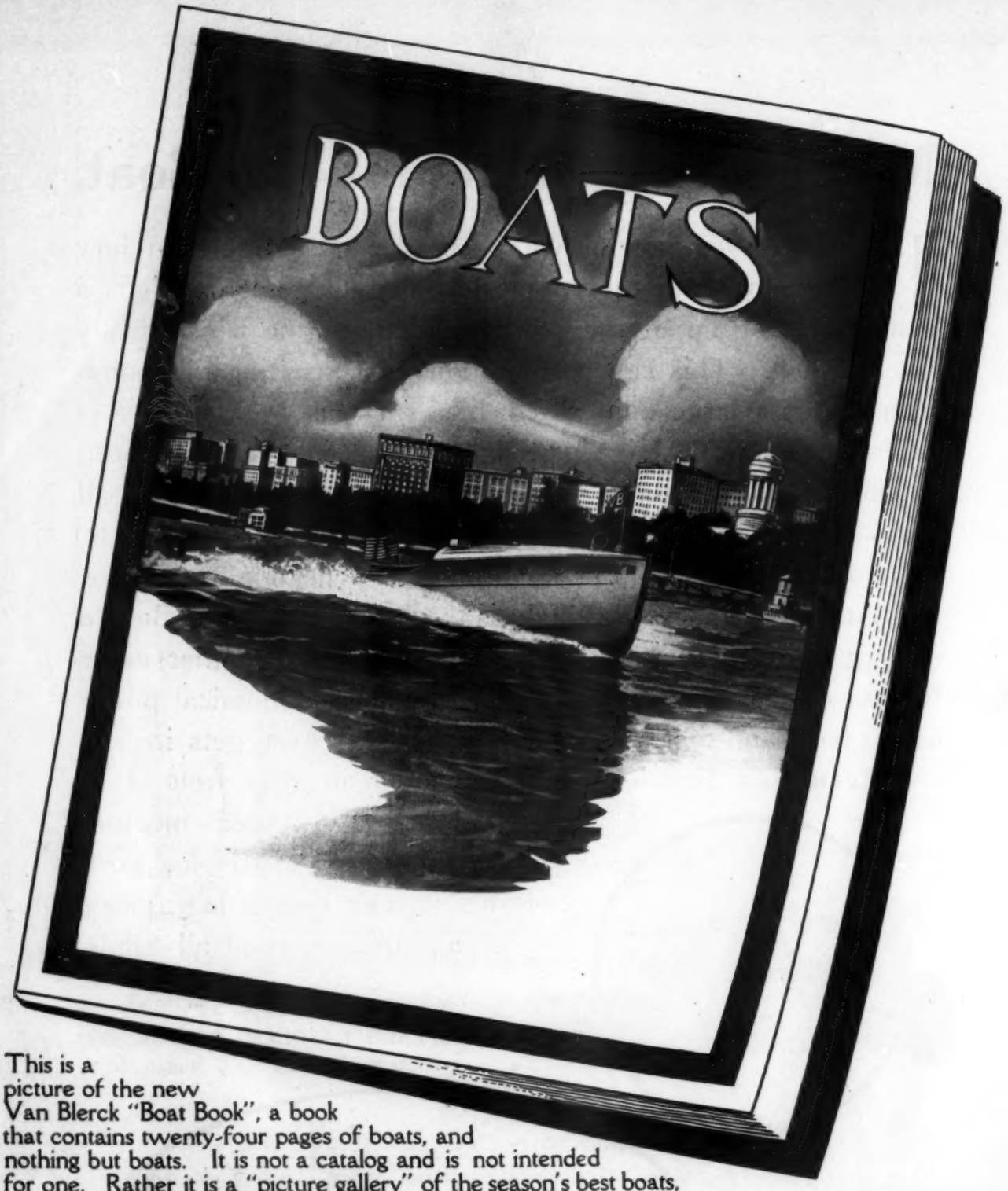

This is a picture of the new Van Blerck "Boat Book", a book that contains twenty-four pages of boats, and nothing but boats. It is not a catalog and is not intended for one. Rather it is a "picture gallery" of the season's best boats, for you to look at and admire, and perhaps to get a few ideas for your own boat about to be built.

In the point of dollars and cents this is probably the most elaborate book ever issued by a marine engine manufacturer, yet it is not an ordinary piece of advertising matter. It is in fact a superb example of the printer's art which you will retain purely for its artistic interest.

As this book is too expensive for unlimited general distribution, requests should be written on the business stationery of rated firms or by rated individuals. Otherwise inquiry must be accompanied by twenty-five cents.

VAN BLERCK MOTOR CO.

MONROE, MICHIGAN

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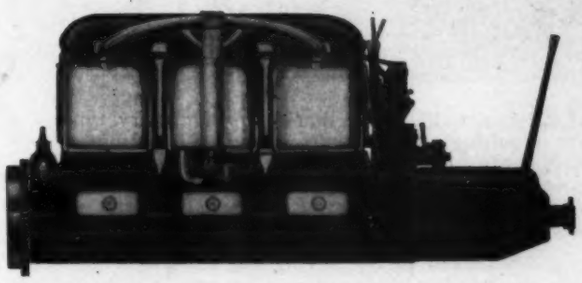
HARBECK



YOUR expectancy of better engines is fulfilled in the new HARBECK models. Their every feature evidences the highest order of engineering talent and manufacturing skill.

Four high speed models, ranging in horsepower from fifty to four hundred, designed by Mr. F. S. Duesenberg and built by the

LOEW-VICTOR ENGINE CO.
CHICAGO

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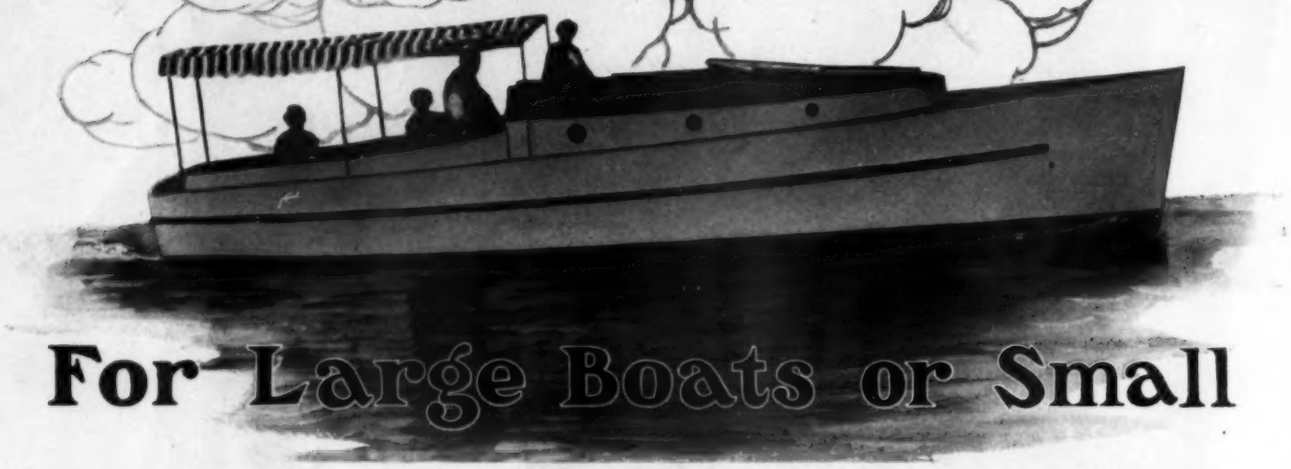
CAILLE
Perfection Motors



For Large Boats or Small

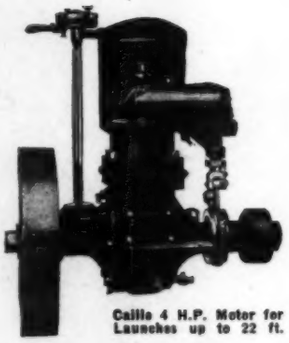
Caille 2 H.P. Motor. Suitable for Tenders and Launches up to 18 ft.

THERE is a Caille Perfection Motor for every type of boat not requiring over 30 horsepower. These motors are so thoroughly adapted to the boats for which they are intended that we much prefer to have detailed information regarding the boat to be propelled before quoting price on the motor best suited to requirements.

This policy on our part is saving our customers thousands of dollars on the purchase price of motors, and it insures absolute satisfaction and perfect service from their boats for years to come.

Statistics have proven that by far the greatest number of boat failures are due to the improper relation of motor to boat. Oftentimes the motor is too small for the service required. And just as often motors are too large and heavy. There is a happy medium. But the average motor buyer is unfamiliar with calculations by which the relation of motor to boat is determined.

Consequently, before quoting prices on Caille Motors, we suggest that you furnish our engineers with full particulars regarding your boat. Their recommendations will be based entirely on facts. We will not urge you to buy a motor too large nor will we specify a motor lacking in power. Our recommendations will be thoroughly honorable and unbiased.



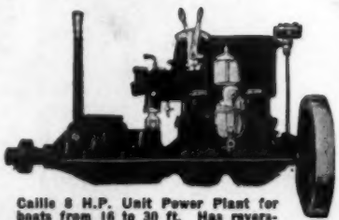
Caille 4 H.P. Motor for Launches up to 22 ft.

Caille 8 H.P. Heavy Duty Motor designed purely as a work boat motor

Information We Need In Your Behalf

Length of hull. Width of hull. Draft. Is boat intended for work or pleasure service? If for pleasure, what speed is desired? If for work service, what is approximate maximum load? The above information will give us a working basis. Any further details you can give will be appreciated.

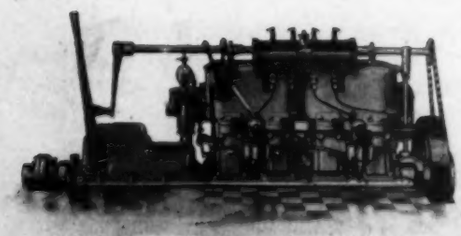
Write Us To-Day. Have Your Motor When Wanted



Caille 8 H.P. Unit Power Plant for boats from 16 to 30 ft. Has reversing gear mounted on same bed as motor.

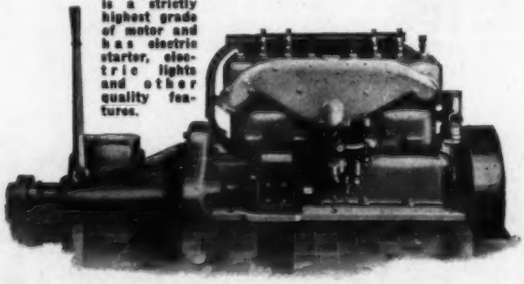
The Caille Perfection Motor Co.

1540 Caille St. Detroit, Mich.



Caille 18 H.P. American Gentleman Motor for pleasure and speed boats up to 35 ft. Has rear starter. Reversing gear mounted on same bed as engine.

Caille Five-Speed Rowboat Motor. Goes forward or backward without reversing motor or changing its speed.



Caille 14 H.P. "Aristocrat" for pleasure boats up to 40 ft. long. This is a strictly highest grade of motor and has electric starter, electric lights and other quality features.

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1917

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January, 1916 **MOTOR BOATING** Vol. XVII, No. 1

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Famous Drivers of High Speed Racing Craft

Commodore Pugh

Thomas Chesebrough

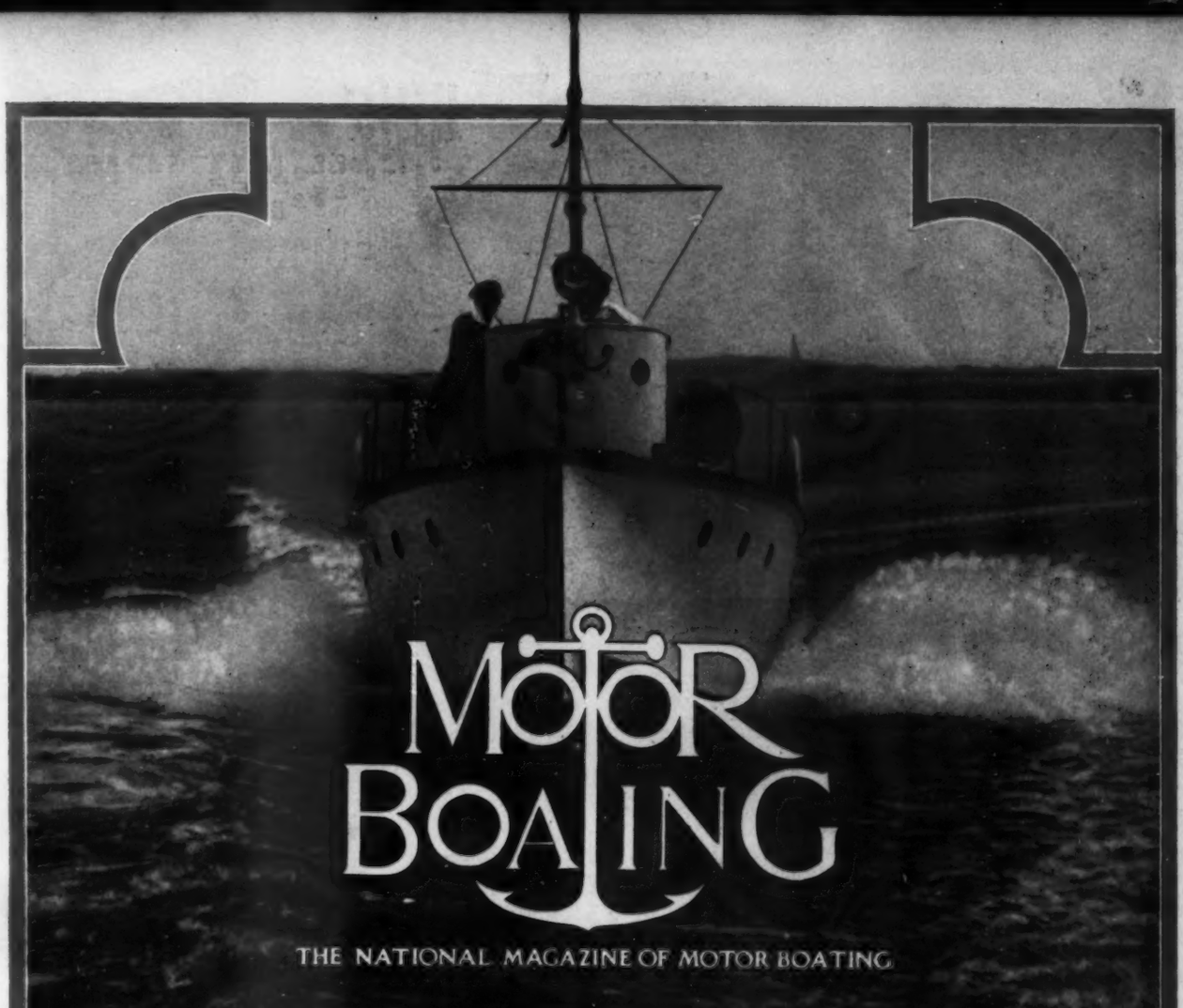
Frank V. du Pont, driver of Tech Jr., winner of the A. P. B. A. mile trials

Alfred E. Lüders

Jack Beebe, not only a driver, but a designer of racing craft

Bob Edgren and Commodore Blackton of the Baby Speed Demons and the Baby Reliances, and Mrs. Blackton, who is quite

Johnny Milot, the kid driver of Miss Detroit



Figuring Out the Game's Appeal

The Diversity of Its Enticements and Its Allurement for All Sorts and Conditions of Men Make the Sport of Motor Boating What It Is

SKIP this, all you people who own motor boats—it's the beginning of the year, and we feel like talking to the man who is just beginning with the sport of motor boating. If you do read the bottom of the page, however, we hope that you will find our sentiments your own.

Like every other recreation, motor boating has been called the sport of kings, but there are mighty few kings who are engaging in it at the present time. Call it the sport of the man whose blood flows not blue but red, and you come nearer to the mark. But it's more than that, as it appeals to all types and kinds. It's more than sailing because it offers you a positive means of locomotion; it's more than automobiling, because proficiency in its art begins where the successful handling of a car leaves off, and it is better than carpentry, experimental electricity, or any of the allied trades in which some men like to dabble, because it combines all of these pursuits.

Whether you design your boat, build it from the keel up, knock it together from fitted forms, or buy it ready-made, it is peculiarly your own possession, and in course of time becomes a part of you. It gives you something to scrape for, plan for, puzzle over, something to think about when your time is your own—and when it's not, for that matter. A motor boat is not a cut and dried proposition, distinguishable from a half million like it only by the number of the engine and the scratches in the paint. Even if you buy of a stock model, there is something about it which sets it apart from all others—the make and power of its motor, the size and pitch of the wheel or the color of its topsides; while if you design or have it done for you, there is no limit to the individualities which you may incorporate.

And when you have built your boat you can play on it, work on it, eat on it and live on it if it possesses even so little as a canvas covering between you and the elements. It is at once your pride and your despair—your pride, because (in spite of your protestation that "it's not much of a boat, but I like it"), you feel that your brains having gone into its building or selection, it is a little better than the product of some other man's gray matter; and your despair, because it's never quite the way you want it. For, know you, that a boat may be built but never completed. If you have a three-inch compass you wish a binnacle; if electric lights only, you desire a self-starter, and if your dinghy is propelled by man power, you long for a little kicker to drive it.

Even were the equipment to comprise all you wish for, there is the ever-present duty of keeping your possession in shape—but therein lies half the pleasure of the sport.

Where Shall We Cruise Next Summer?

No. 1. Potomac River

By A. B. Bennett
Commander, Potomac River Power Squadron

The Commander

WHEN I tell you that there are over twenty harbors on the Potomac River made by as many tributary creeks and rivers, all available for the motor boat up to four or five feet of draft, and some of them good for a vessel of even greater draft, you skippers of other waters should sit up and take notice. Do not think for a minute that I am going to spoil your cruise to our favorite river by telling you all about each of these harbors—I'm going to leave most of them for you to find out about by dropping anchor there and looking around your-

One of the many land-locked coves which are abundant on the Potomac

blowing great guns for an hour or two—then all serene. These summer storms come on in the afternoon at about four or five o'clock, so the wise ones down our way make the day's run early, and are usually anchored safely in one of the many harbors by mid-afternoon.

We really wish that the yachtsmen from the clubs up North would come down and try our waters. Come right up to the head of navigation on the Potomac, and let us return the courtesies so often extended us on our visits up your way. Let me be your pilot; take me on as you come around Point Lookout. You tell me that your gasoline and supplies are getting low as you have had a long run on the bay—very well, we

Just an example of the kind of towns one finds scattered along the picturesque Potomac

you are tired of boat fare, or if the cook wants to go on a strike, it is a good idea to drop anchor and go ashore, where Mr. Dunbar will welcome you to the house and give you your meals, although you live aboard your little ship.

I am in no hurry, so stay as long as you like. When we do weigh anchor I am going to run you up into St. Mary's. Really beautiful scenery can be found there, the river narrowing as we run in, and the hills rising high on each side. Two miles in is Priest's Point, where there is a vacation home for tired and worn Fathers who come from their parishes to rest and recreate. Two miles more and we round St. Mary's Point, dropping anchor in a bay made by Horseshoe Bend. This is a beautiful bay, all hemmed in by hills and with deep water going right up to the beach. The wharf is somewhat misleading, for the sign "St. Mary's City," is all the city there is. At the top of the hill is a handsome Colonial building,

(*Continued on page 76*)

One of the many land-locked coves which are abundant on the Potomac

(Continued on page 76)

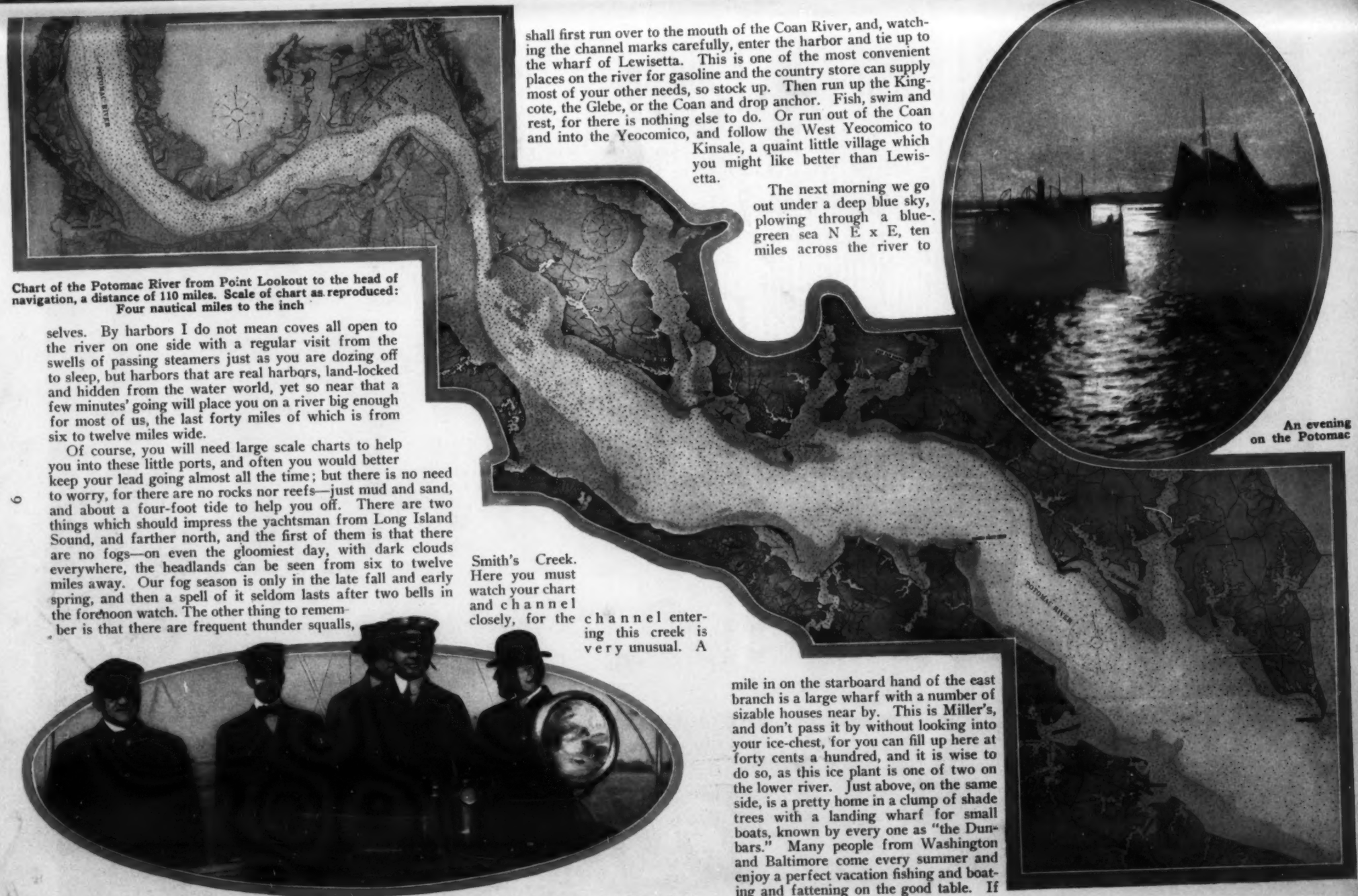


Chart of the Potomac River from Point Lookout to the head of navigation, a distance of 110 miles. Scale of chart as reproduced: Four nautical miles to the inch

selves. By harbors I do not mean coves all open to the river on one side with a regular visit from the swells of passing steamers just as you are dozing off to sleep, but harbors that are real harbors, land-locked and hidden from the water world, yet so near that a few minutes' going will place you on a river big enough for most of us, the last forty miles of which is from six to twelve miles wide.

Of course, you will need large scale charts to help you into these little ports, and often you would better keep your lead going almost all the time; but there is no need to worry, for there are no rocks nor reefs—just mud and sand, and about a four-foot tide to help you off. There are two things which should impress the yachtsman from Long Island Sound, and farther north, and the first of them is that there are no fogs—on even the gloomiest day, with dark clouds everywhere, the headlands can be seen from six to twelve miles away. Our fog season is only in the late fall and early spring, and then a spell of it seldom lasts after two bells in the forenoon watch. The other thing to remember is that there are frequent thunder squalls,

shall first run over to the mouth of the Coan River, and, watching the channel marks carefully, enter the harbor and tie up to the wharf of Lewisetta. This is one of the most convenient places on the river for gasoline and the country store can supply most of your other needs, so stock up. Then run up the Kingcote, the Glebe, or the Coan and drop anchor. Fish, swim and rest, for there is nothing else to do. Or run out of the Coan and into the Yeocomico, and follow the West Yeocomico to Kinsale, a quaint little village which you might like better than Lewisetta.

The next morning we go out under a deep blue sky, plowing through a blue-green sea N E x E, ten miles across the river to Smith's Creek. Here you must watch your chart and channel closely, for the channel entering this creek is very unusual. A mile in on the starboard hand of the east branch is a large wharf with a number of sizable houses near by. This is Miller's, and don't pass it by without looking into your ice-chest, for you can fill up here at forty cents a hundred, and it is wise to do so, as this ice plant is one of two on the lower river. Just above, on the same side, is a pretty home in a clump of shade trees with a landing wharf for small boats, known by every one as "the Dunbars." Many people from Washington and Baltimore come every summer and enjoy a perfect vacation fishing and boating and fattening on the good table. If

An evening on the Potomac

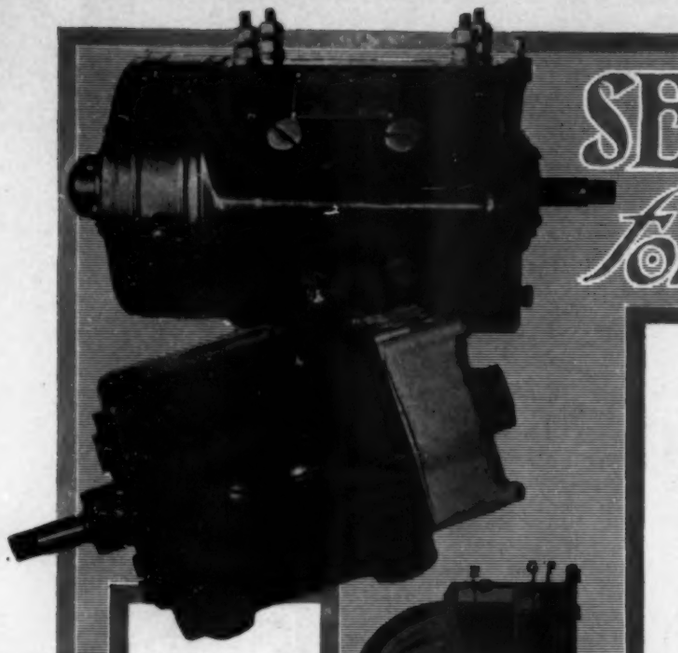
Commander Bennett at the wheel; on the extreme right is E. P. Bertholf, Captain Commandant of the U. S. Coast Guard Service, and on the extreme left is W. A. Hopkins, aide to Commander Upton of the U. S. Power Squadron

SELF-STARTER for MARINE

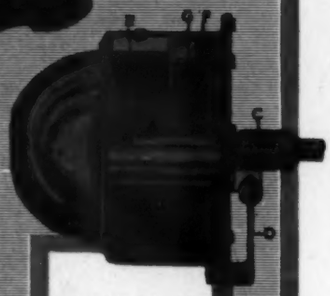
[Time was when a marine engine started by hand the distant past. One's muscle is still evoked in but the motor starts, and the geared-down rear by half. Many, however, of the new engines to apparatus designed to eliminate entirely the work trical, although some of the larger motors will be show nearly a dozen self-crankers which are either installed with minor changes on old motors. The the essential differences of these outfits.—Editor.]

Dyneto Electric Starters

The Dyneto Electric Co., of Syracuse, N. Y., is continuing the manufacture of its regular line of single-unit Dyneto starters for 1916 without change. These machines are very suitable for motors whose cylinders are of 4½-inch diameter or smaller. The installation is declared to be very simple, the drive being by means of a silent chain direct to the crankshaft, with no clutch, gearing regulator or automatic switches used. This company has also added a line of two unit outfits, which are made in two sizes—the smaller, or size A, being intended for motors up to 3½-inch bore, and the larger, or size B, being for heavier work. The generator in these systems is usually driven at one to one and one-half times the crankshaft speed, and the drive may be by belt, silent chain or gear. An automatic switch or regulator is used. The starting motor is usually operated through a Bendix drive, meshing with teeth cut in the flywheel and geared at a ratio of ten to one. In the size A the motor and generator weigh a little less than 18 pounds each, and in the B outfit the weight of each unit is about 25 pounds. Special fittings for different installations can be worked out, and it is said that the machines are easy to install and in no way likely to give trouble.



Size A motor-generator, and size A generator, two-unit system, both Dyneto outfits



The Eveready mechanical starter

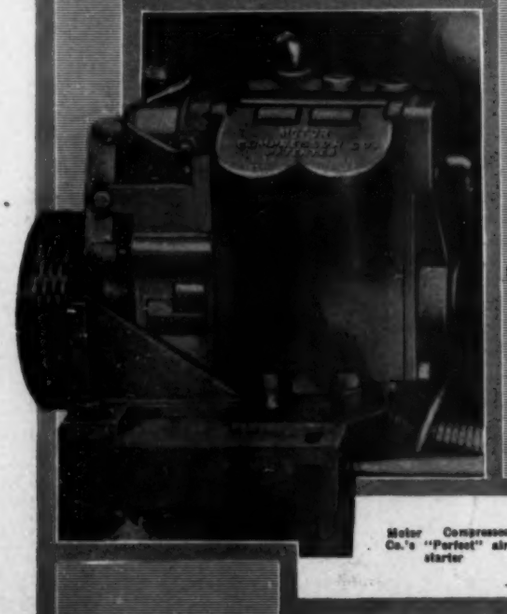
Westinghouse Systems

Starting and lighting systems as manufactured for motor boat use by the Westinghouse Electric & Mfg. Co., of Pittsburgh, Pa., are of the two-unit system, and compactness, efficiency of operation and light weight are among the features claimed for them. Westinghouse generators are coupled directly to a driving shaft with no chain pulley or gear drive. The cut-out switch is controlled by generator voltage and not by speed, in order to prevent discharge of the battery through the generator. The current cuts "out" at 25 to 30 per cent. lower speed than "in" in order to provide against continual operating at the critical speed. The generator, like the starting motor, is entirely enclosed, leaving no chance for dirt, oil or water to get in, and the two units are also alike in that the frames are of the proper construction to give high magnetic permeability and strength with light weight. There are no permanent magnets in this generator. The starting motors are usually applied by gearing to teeth on the flywheel, with shifting pinions, of which three types are provided. The first of these is the non-automatic mechanical shift wherein the lever that shifts the pinion also closes the starting system, first spinning the motor, then shutting off the power until the gears come into mesh with the motor turning on its own momentum, and finally throwing on the full power, cranking the engine. The automatic mechanical shift, another form, consists of a worm shaft mechanism which throws the pinion into mesh automatically without shock when the electric motor starts and throws out when the gasoline engine picks up. The third type is an electro-magnetic shift in which a solenoid on one end of the motor throws a spirally cut pinion into mesh with the gear on the flywheel when the starting switch is closed, releasing when the engine takes up its cycle. Either foot switch or electrically-operated switch with push button may be used.

Westinghouse starting motor with self-contained reduction gearing

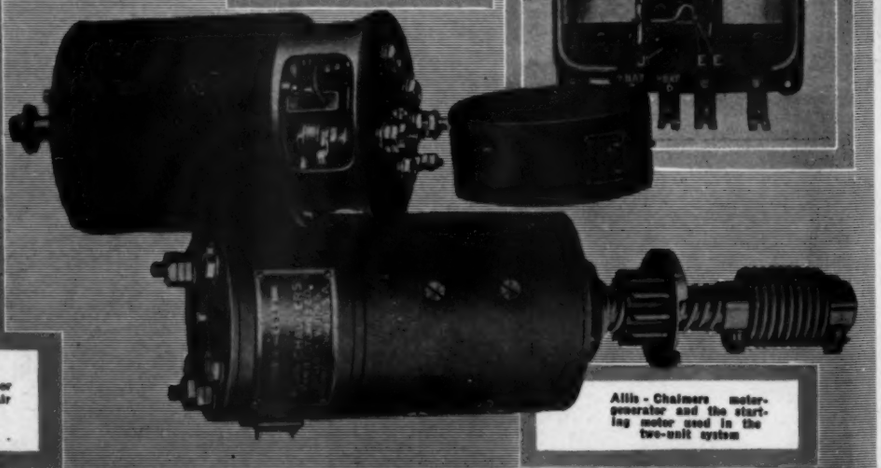
Allis-Chalmers in Two Types

The Allis-Chalmers Mfg. Co., of Milwaukee, Wis., manufactures electric starters in both the single-unit and the two-unit types, and both are carefully designed and constructed with a large factor of safety. High-grade ball bearings of the self-aligning type are employed and all parts are accurately machined and assembled. The starting motor is positive in action, and, it is declared, will start the engine under most adverse conditions, being powerful enough to overcome back-kicks. In the single-unit system depressing the starting switch allows the current to flow from the battery to the motor-generator. Operating as a motor it cranks the engine to which it is mechanically connected. After the engine is started the switch is released, disconnecting the battery, but as the engine comes up to speed the machine operates as a generator, restoring current to the battery. An automatic regulator is used to prevent loss of current. In the two-unit system the starting motor is usually connected to the flywheel and is brought into gear by a Bendix screw.



Motor Compressor Co.'s "Perfect" air starter

The Ward Leonard automatic controller, showing its interior construction



Allis-Chalmers motor-generator and the starting motor used in the two-unit system

POSSIBILITIES MOTORS

power if at all, but that time is now fading into the old fashioned manner in a majority of cases, starter has reduced the amount of effort required be seen at the show this year will be equipped with of starting. Most of this equipment will be electfitted with air starters. On these two pages we standard equipment of new models, or may be illustrations, together with the text, make clear

The Leece-Neville Systems

The Leece-Neville Co., of Cleveland, O., manufactures single-unit and two-unit starting and lighting systems which are furnished as standard equipment on upwards of a dozen different makes of marine motors. These are all of the 24-volt type, as the maker considers such a comparatively high voltage essential for economical operation of a boat's lighting system. The single-unit systems are intended only for small motors and on such are stated to operate with the utmost efficiency. The two-unit systems, of which the starting motor of one is shown in the accompanying illustration as applied to a four-cylinder motor, are intended for high-powered engines. These systems consist of a starting motor, a generator, a circuit breaker and a switch. The generator is usually mounted in a convenient place so that it can be driven by gears or silent chain from the crankshaft or magneto drive shaft of the engine. The gear ratio is determined by the speed at which the engine normally runs. The electric motor is fitted with an automatic Eclipse-Bendix transmission, starting the engine through gears cut in the flywheel. This system is declared to be trouble-proof, because it is impossible for the pinion to mesh with the flywheel when the engine is running.

Kemco Fan Type

For marine use the Kemco Electric Mfg. Co., of Cleveland, O., usually mounts its well-known fan-type generator minus the fan blades, these being unnecessary with boat engines. The starting motor is installed for operation on the flywheel by means of Bendix transmission. This combination, in connection with the Ward Leonard controller, is declared to afford an excellent two-unit outfit. Kemco motors have four poles and can be furnished to operate on either 6 or 12 volts. The shaft and armature are stated to be of sufficient size and strength to transmit the heavy starting torque, with all windings properly insulated to withstand the severe service required. The wires in the armature are secured in a proper manner to permit the operation of the motor at the highest possible speed under no load without injury to the windings.

North East Motor Generators

The North East single-unit system, manufactured by the North East Electric Co., of Rochester, N. Y., has undergone no changes during the past year except in minor improvements which do not affect the appearance or operation. The North East motor-generator has been in use for starting and lighting duty on motor boats for several years, and is declared to have given most satisfactory service. This system is so designed that it charges the battery at a slow and uniform rate, so that while the battery is always fully charged, it is never overcharged. As shown in the illustration the motor-generator is constructed with a removable hood which may be detached to inspect the brush arrangement. There are four brushes—two for each terminal, this construction allowing the machine to operate even though two of its units should become broken.

The brush holders are so designed as to insure even contact at all times, the brush tension being always the same. Simplicity is the keynote of the entire system, and it has been designed and built with a view to making it an easy matter for any mechanic to make a successful installation.

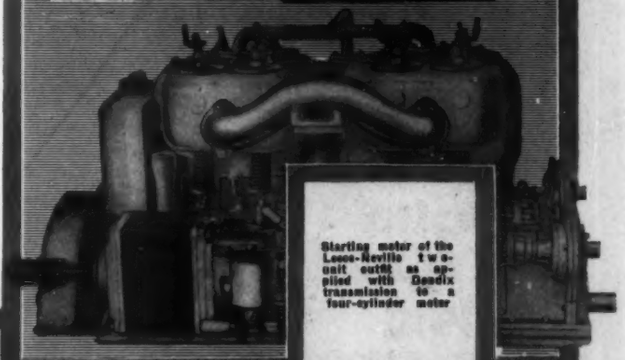
Simms-Huff Single-Unit

The Simms Magneto Co., of East Orange, N. J., has, in the production of its starting and lighting system, devoted research work to the subjects of weight, simplicity, economy, durability, etc., with the result, it is declared, that a single-unit machine of remarkable efficiency is being manufactured. The starting switch in this system, which is either hand or foot-operated, automatically controls the battery connections, and is stated to provide a system of connections for the lighting circuit that insures healthy battery action and guarantees a minimum fluctuation in candlepower when the motor, for instance, is being started with the lights burning, or when it is raced. Through the inherent winding arrangement the motor-generator when used for starting becomes a 12-volt cumulative compound motor, which instantly on being driven by the engine,

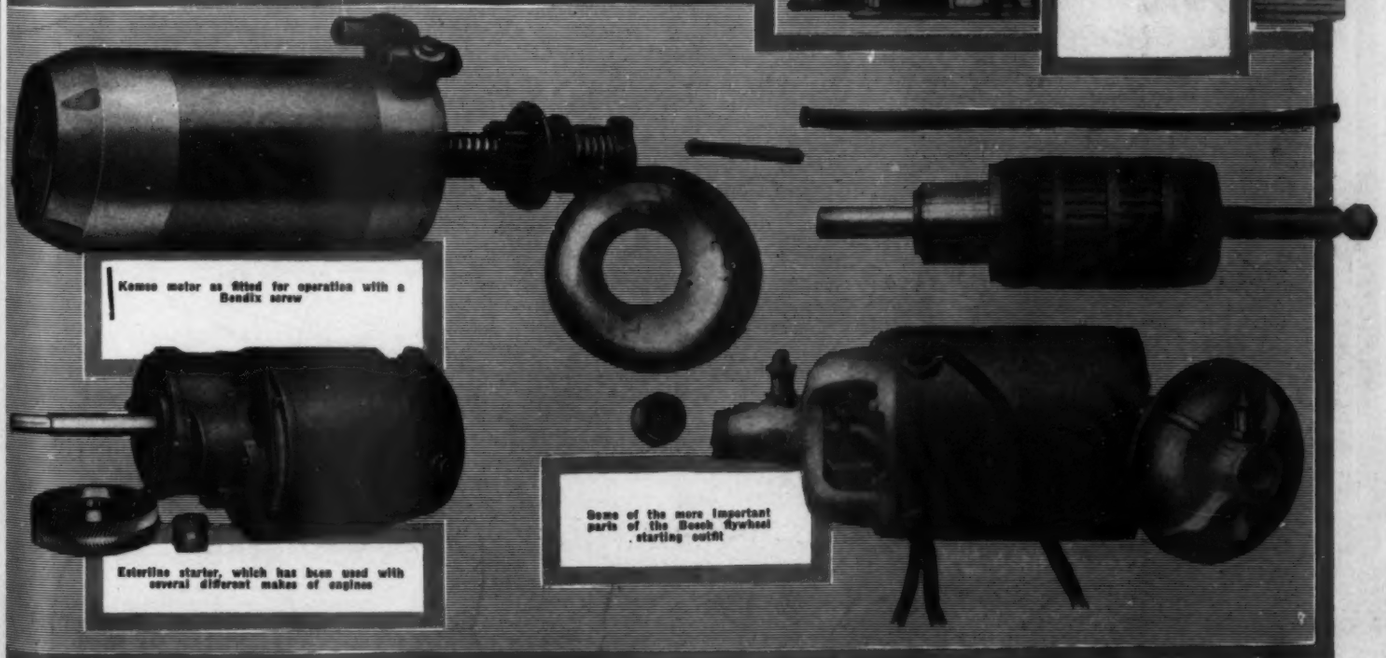
(*Continued on page* 54)

Standard North East generator with larger view showing the double brush system

Motor-generator of Simms-Huff one-unit system



Starting motor of the Leece-Neville two-unit outfit as applied with Bendix transmission to a four-cylinder motor



Kemco motor as fitted for operation with a Bendix screw

Some of the more important parts of the Bosch flywheel starting outfit

Esterline starter, which has been used with several different makes of engines

This Year's New Motors

Two-Cycle

One Cylinder

Rated H.P.	Motor	Bore & Stroke	R.P.M.	Wt.
4	Ferro	3¼x3½	800	186
5	Eagle	4½x4	800	218
5	Valveless	4 x4	600	175
5½	Ferro	4¼x4¼	800	243
6	Eagle	4½x5	600	390
6	Mohawk	4½x4½	700	330
7	Missouri	5 x6	500	675
7	Watertown	5 x5	600	...

Two Cylinders

6	Gray	3½x3½	1 000	189
8	Ferro	3¾x3½	800	239
10	Red Wing	4 x4½	600	340
10	Valveless	3½x3½	720	190
11	Ferro	4¼x4¼	800	333
11	Gray	4¼x4¼	1 000	375
12	Mohawk	4½x4½	700	480
14	Missouri	5 x6	500	1 100
14	Watertown	5 x5	600	...
15	Ferro	5 x5	800	417
15	Vim	4 x4	700	340
25	Hettinger	7½x9	375	2 000
25	Vim	5 x5	1 100	370
30	Robert's	5½x6	1 200	700

Three Cylinders

12	Ferro	3¼x3½	800	312
17	Ferro	4¼x4¼	800	448
18	Wisconsin	4 x4	900	375
20	Bridgeport	4½x5	700	500
22	Missouri	5 x6	500	1 650

Four Cylinders

Rated H.P.	Motor	Bore & Stroke	R.P.M.	Wt.
25	Ferro	5 x5	800	555
25	Mohawk	4½x4½	700	875
30	Missouri	5 x6	500	2 700
50	Hettinger	7½x9	375	4 000
65	Robert's	5 x5	1 200	400

Six Cylinders

60	Wisconsin	4½x4½	1 150	720
100	Robert's	5 x5	1 200	600

Eight Cylinders

400	Pierce-Budd	6½x7	1 400	1 750

Four-Cycle

One Cylinder

4	Regal	4 x4½	800	275
5	Regal	4½x5½	600	360
6	Anderson	5 x6½	500	600
7	Regal	5¼x6½	550	780
9	Regal	6½x7	500	1 040
11	Evansville	7 x9	350	1 050

Two Cylinders

8	Regal	4 x4½	850	275
10	Gray	3¼x4½	1 000	435
10	Miller	4½x6	600	700
10	Regal	4½x5½	600	685
12	Harris	5½x6¾	475	...
14	Miller	5¼x7 4	450	1 050
14	Regal	5¾x6½	550	950
16	Miller	6 x8	350	1,400
18	Regal	6½x7	500	1,560
20	Tygard	4 x4	1 800	300
22	Evansville	7 x9	350	1 815
34	Bridgeport	7½x9	375	2 000

Three Cylinders

Rated H.P.	Motor	Bore & Stroke	R.P.M.	Wt.
24	Peerless	5¾x7	700	1 400
30	Frisbie	7 x9	500	1 700
32	Hall	7½x11	350	4 000
24	Mianus	6 x8	400	2 350
30	Wright	6 x7½	550	...
33	Evansville	7 x9	350	2 375
38	Bridgeport	7½x9	375	3 200
45	Frisbie	7 x9	500	2 350
45	Wright	7½x9	475	...

Four Cylinders

10	Doman	2¼x3½	1 500	225
10	Ferro	2¾x4	1 000	290
12	Universal	2¾x4	1 700	300
14	Caille	3½x4	900	664
14	L-A	3¾x4½	800	350
15	Miller	3½x5	650	450
16	Kermath	4 x4	1 000	450
16	Regal	4 x4½	800	650
18	Wisconsin	3¾x5	1,000	490
20	Chesapeake	4½x5	800	600
20	Gray	3¾x4½	1 150	654
20	Harris	5 x5½	550	...
20	Red Wing	3½x4½	1 200	375
20	Regal	4½x5½	600	900
22	Miller	4½x6	600	1 000
25	Sterling	3¾x5½	1 000	550
30	Regal	5¾x6½	600	1 425
32	Fulton	4¾x5	...	540
33	Red Wing	3¾x5¼	1 400	575
36	Alexander & Cox	5½x6	600	...
36	Regal	6½x7	500	1 040
40	Doman	4 x6	1 200	600
40	Miller	6 x7½	450	2 200
40	Wright	6 x7½	550	...
44	Evansville	7 x9	350	2 950
45	Miller	6 x8¼	400	2 500
46	Wisconsin	5.1x5½	1 000	800
48	Bridgeport	7½x9	375	4 500
50	Peerless	5¾x7	700	1 400
50	Winton	6½x9	450	4 200
55	Sterling	5½x6¾	1 000	900
60	Buffalo	6¾x9	800	400
60	Frisbie	7 x9	500	2 900
60	Wright	7½x9	475	...
75	Hall	7½x11	350	6 000
75	Harbeck (Loew-Victor)	4½x6	1 500	600
80	Buffalo	6¾x9	800	400
84	Clay	8½x10	375	6 200
85	Harris	9x11	375	...
100	Hall	8 x12	350	8 000
120	Robert's Motor	7x 7½	1 000	1 000

Six Cylinders

35	Gray	3¾x5¼	1 000	752
40	Anderson	5 x6	500	1 350
40	Harris	5½x6¾	500	...
45	Fulton	4¾x5	...	750
45	Speedway	4½x5	1 000	1 440
50	Sterling	5½x8	550	3 700
55	Wisconsin	4¾x5½	1 000	1 200
60	Curtiss	4 x5	1 200	...
60	Fulton	5¼x7	...	1 025
65	Harris	6½x8½	450	...
65	Wright	6 x7½	550	...
70	Speedway	4½x5½	1 200	1 075
70	Wisconsin	5.1x5½	1 200	1 225
72	Doman	7 x9	400	3 100
80	Palmer	7½x10	300	5 600
80	Speedway	6 x6	800	1 800
85	Sterling	5½x6¾	1 000	1 175
90	Wright	7½x9	475	...
110	Harbeck (Loew-Victor)	4½x6	1 500	900
110	Wisconsin	5¾x7	900	1 500
120	Maximotor	4½x5	1 350	600
115	Speedway	6¾x8½	600	5 000
125	Hall	7½x12	350	8 000
125	Speedway	5¾x7	1 200	1 800
145	Sterling	5½x6¾	1 500	1 450
150	Hall	8 x12	400	10 000
150	Winton	6½x9	900	3 600
165	Van Blerck	5½x6	1 700	1 280
180	Robert's	7 x7½	1 000	1 200
225	Speedway	4½x5	1 100	2 800
275	Harbeck (Loew-Victor)	6¾x7½	1 500	2 400

Eight Cylinders

60	Miller	4½x6	800	1 400
75	Curtiss	4 x5	1 100	...
85	Miller	5¼x7½	600	2 200
100	Mercury	5¼x5	900	1 050
120	Mercury	5¼x6	900	1 120
125	Missouri	5 x5	1 000	645
150	Maximotor	5 x6	1 350	700
150	Sterling	5½x6¾	1 000	2 150
170	Speedway	5¾x7	1 200	2 300

(*Continued on page 56*)

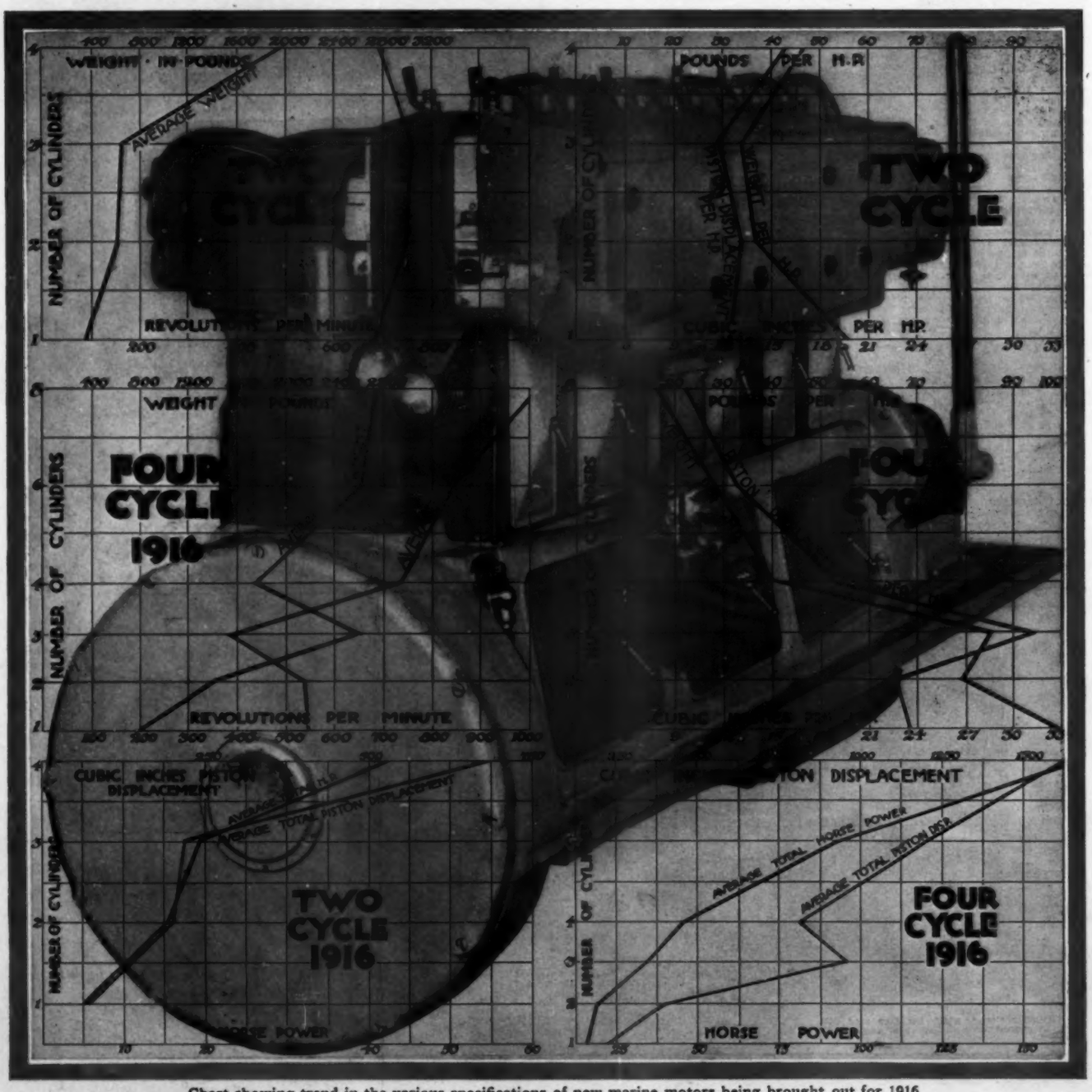


Chart showing trend in the various specifications of new marine motors being brought out for 1916

Controlling the Cruiser From on Deck

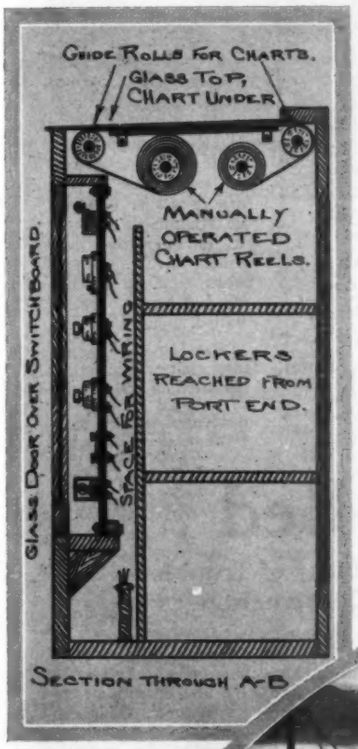
By Frank P. Huckins

IF you have ever run into a strange port on a wet, blowy day, and had your charts get soaked and dissolve into pulp just when you most needed them; if you have ever made a dozen trips an hour below into your engine-room to determine if the oil is running, the water circulating or if the bilge needs pumping; if you have to go below to turn on your charging generator; if you have to go forward at dusk in a nasty seaway to light up the running lights; or, if lacking a prompt means of restarting your engine, you have stalled, greatly to the delight of your fellow-yachtsmen, just as you have tried to make the float on a busy Saturday afternoon and rammed the dock with your accumulated momentum, you will be interested in my tale of a centralized control system, which for the lack of a better name we shall call the control cabinet.

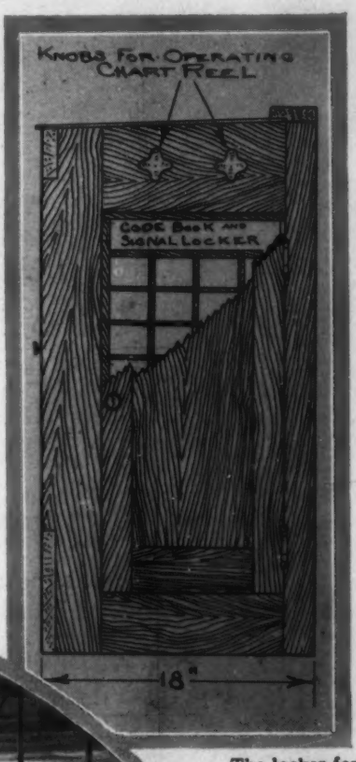
Having had all these experiences in building Kex II, I tried to incorporate every possible device connected with the boat's operation under one housing, immediately forward of the wheel and binnacle, and after two seasons' service I am convinced of its practicability.

The control cabinet consists of a rectangular mahogany case of convenient dimensions. The top is a piece of plate glass, slanting slightly aft, fitted water-tight with overhanging rounded edges. There are two glass doors in the front, behind which are two half-inch slate instrument boards carrying the ignition, charging and lighting switches, circuit breaker, voltammeter, fuses, tell-tale pilot lights in series with and indicating the proper performance of the running lights, a gong connected with a float in the bilge to give warning of any leak, a gong connected with a contact near the carbureter to report the presence of fire that might ensue from a spit-back, a main air valve, the air starting valve lever, a clock, barometer, tachometer and revolution counter, an air gauge, a manometer to indicate the proper circulation of cooling water, a visible oil circulation glass, a clutch handle for engaging the battery generator, a clutch handle to start and stop the air compressor, and a device for shutting off the gasoline at the tank in case of fire. There are doors on each end; that to starboard exposing twenty-eight pigeonholes and self-containing the International Code Flags and Code Book conveniently within reach for Power Squadron evolutions; that to port allowing access to a very sizable locker for stowing flags, glasses and all the odds and ends constantly needed close at hand for the day's run. The instrument boards are so placed as to leave sufficient space in the rear to run wires and connections to the engine-room below.

The charts are made up into a long roll, by glueing end to end the consecutive charts of the usual coastline traversed (in my case, New London to Nova Scotia,) being very careful to have all the center lines follow a common axis. An end is tacked to each of the lower rolls shown in the cross



A sectional view of the cabinet shown in assembly on the page following



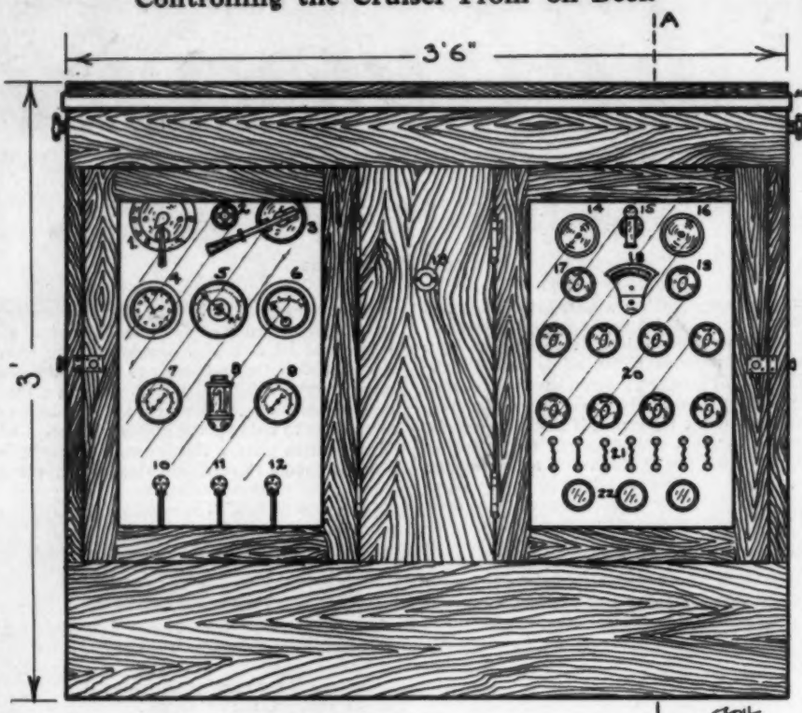
The locker for signal flags, etc., for use in Power Squadron evolutions

The control cabinet on Mr. Huckin's cruiser, Kex II

section. The charts pass up over guide rolls, and are held smoothly against the under side of the glass top by a flat shelf immediately beneath. They are moved along by the hand knobs at either end of the cabinet, and expose sufficient area to plot short courses. Thus the chart is always in front of the steersman and always dry. An ocean chart is kept below for laying out the long runs. The rolls are of oak, two inches in diameter with half-inch brass centers running in brass bearings. The whole apparatus is so arranged that it may be quickly removed for replacing charts and getting at the wiring below.

Thus the engine is started, the whole boat run, and its entire operation constantly observed from the steersman's position. The engine-room is seldom visited.

Many variations from this design are possible to suit the individual boat. By very little change, the space between the two doors may be adapted to carry the steering wheel with its control levers and binnacle.



CONTROL CABINET · FRONT.

1. IGNITION, 2 MAIN AIR VALVE, 3 STARTER VALVE, 4 CLOCK, 5 BAROMETER, 6 TACHOMETER, 7 AIR GUAGE, 8 OIL SIGHT FEED, 9 WATER COOLING GUAGE, 10 GENERATOR CLUTCH, 11 COMPRESSOR CLUTCH, 12 GASOLINE SHUT-OFF, 13 BINNACLE LIGHT CONNECTION, 14 FIRE ALARM, 15 CIRCUIT BREAKER, 16 BILGE ALARM, 17 MAIN SWITCH, 18 VOLT-AMMETER, 19 CHARGING SWITCH, 20 LINE SWITCHES, 21 FUSES, 22 RUNNING LIGHTS TELLTALE. SCALE 1½"=1'

As a chart case alone, the control cabinet is well worth the room it occupies on the average cruising boat and by using every available inch within for controls and instruments, it becomes an indispensable part of modern equipment.

To build it complete, the writer put in about one hundred and twenty-five hours' work in his shop at home. The cost of materials and instruments may run anywhere from $25 up, according to the degree of elaborateness and quality of apparatus used.

You would better make one for your boat during these long winter evenings when you are dreaming of your next summer's cruising. It is interesting and comparatively easy work, and no end of comfort when once installed.

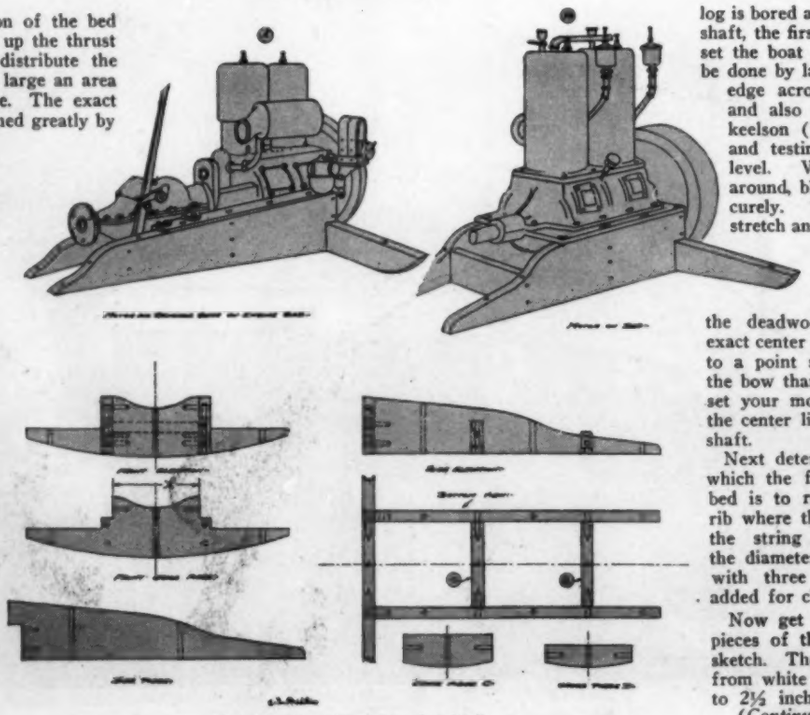
[Kex II, on which this interesting cabinet is installed, is a 38-footer of unusual roominess, described in our September, 1914, issue.]

Putting in an Engine Bed

A Few General Instructions to Be Followed to Eliminate the Possibility of Trouble—One of the Most Important Details of Motor Boat Design and Construction

By C. E. Bradley

THE design and construction of the bed should be such as to take up the thrust from the propeller and distribute the vibrations of the motor over as large an area of the boat's bottom as possible. The exact form of the foundation is governed greatly by the style of the motor and the shape of its base, and owing to this fact it is impossible to specify any one type of bed that will apply in all cases. The accompanying sketches are intended to convey an idea of an ordinary type of a bed of simple design that can be readily changed to suit these various shapes and styles. The bed at *A* not only carries the motor, but the reverse gear as well. The combined length of the two requires a much longer bed than the one at *B*, where no clutch is used. Many builders install the foundation for the motor while erecting the frame, bolting it to the keel and ribs and countersinking the heads of bolts to allow planking to lie flat along the timbers. However, if the following general set instructions are carried out with a little care, no great difficulty should be experienced in setting up the bed.



Details of a simple engine bed

Assuming that the shaft log is bored and ready for the shaft, the first operation is to set the boat level. This can be done by laying a straightedge across the coaming and also the keel or the keelson (inside the boat) and testing with a spirit level. When level all around, block the boat securely. Then tightly stretch and fasten a strong string from a small piece of stock nailed to the back end of the deadwood through the exact center of the shaft hole, to a point somewhat nearer the bow than you propose to set your motor. This gives the center line of motor and shaft.

Next determine the rib on which the front end of the bed is to rest. This is the rib where the distance up to the string equals one-half the diameter of the flywheel with three or four inches added for clearance.

Now get out the two side pieces of the bed similar to sketch. These should be cut from white oak about 2 inch to 2½ inch stock for ordi-

(*Continued on page* 56)

A New Departure in Power Plants

A view of Lady Baltimore under way

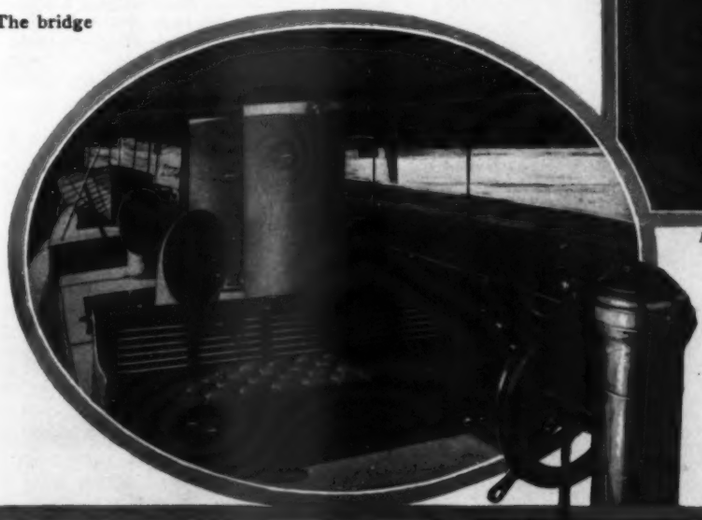
WHILE designed by Bowes & Mower primarily for the San Francisco race, the owners of this new boat required a boat that would be suitable for general coast cruising and of as smart an appearance as possible; in other words, a thoroughly modern and up-to-date cruiser that would attract favorable attention in any yachting center and at the same time be a worthy entry for an ocean race. The plans show how well they have succeeded in meeting the requirements as to appearance and arrangement.

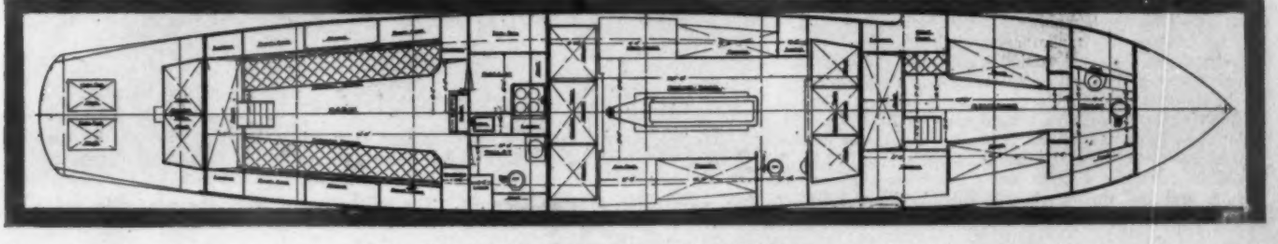
The new boat is owned by a syndicate of Baltimore yachtsmen and was built at the yard of the Mathis Yacht Building Company, of Camden, N. J., under the personal supervision of the designers. She is fitted with a motor built specially for her by the Hall-Seeley Motor Corp., of Baltimore, Md. The motor has six cylinders, 6½-inch diameter by 12-inch stroke and will develop 60 to 100 h.p. The motor has many new and interesting features in its design and has shown in actual tests an astonishing economy of fuel consumption. The motor is the invention of Milan W. Hall, and this engine represents the highest point of efficiency that has yet been reached in internal combustion engines. It has a thermal efficiency of more than 25 per cent. which means that it will operate on one-half of a pint of gasoline per horsepower hour, a saving of one-half of the fuel as compared with the usual types of gasoline engines. One of the prominent features of the motor is that while it is completely enclosed all of the plates are easily and quickly removed and any part of the motor may be readily reached. In this motor the manifold, with its ignition system is on the top with the cylinders suspended independently so that to take down one part one does not have to interfere with any other part. Tests have been made in the taking out of pistons and even cylinders, and this work has been accomplished

Photograph Copyright by Pearce

A view of the 60-100 h.p. motor in running condition

The bridge





Interior arrangement plan of Lady Baltimore

The six-cylinder 6½ x 12-inch Hall-Seeley motor with all plates removed and showing accessibility

pumps and driving ventilating fans, etc. There are two transoms for the engine-room crew on watch and a toilet. The engine-room is reached through hatches in the top of the engine-room trunk and two hatches are provided, so that there will always be one to leeward, which can be used and kept open in ordinary weather. The two stacks are used for engine-room ventilation, the after one being further utilized for the engine exhaust and the forward one for the crankcase ventilation system. Sleeping accommodations for all hands will be provided forward and aft, so that only the watch on duty will be in the engine compartment when under way.

The accommodations aft consist of a main cabin

(*Continued on page* 56)

The forward stateroom

within three-quarters of an hour. The engine is installed amidships in an engine-room 20 feet long with double watertight bulkheads at each end, thus cutting it off absolutely from the living quarters forward and aft. Fuel tanks are located at each end of the engine-room, having a total capacity of 1,200 gallons. In addition to this supply there are reserve tanks in the lazarette with a capacity of 300 gallons additional, making a total fuel capacity of 1,500 gallons. All tanks are specially built of heavy soft copper, riveted and brazed and thoroughly fitted with baffle plates. All are set in deep copper pans, fitted with scuppers, leading overboard. The fresh water tanks have a total capacity of 450 gallons, and are placed so that the weight is distributed throughout the length of the boat. The engine-room has a large work bench on the port side, and on the starboard side is located the auxiliary machinery, which is used for lighting,

The main cabin looking forward. The galley opens from the port side and a toilet room from the starboard

This odd-looking surface flier has a length of 30 feet to a beam of 20 feet

It is powered with two six-cylinder Van Blercks turning aerial propellers

A Gliding Boat

Thirty-Mile Skimmer for Mail Service in Colombia

ONE of the most unique craft launched in the vicinity of New York last year was the gliding boat, designed by D. LaChapelle, of Nyack, N. Y., and shown in the two upper photographs on this page. This boat is 30 feet long by a beam of 20 feet and consists of six sections over which is built a deck that carries the cabin and two six-cylinder Van Blerck motors driving aerial propellers by chain. The engines operate at from 1,000 to 1,200 r.p.m., and it is declared that speeds of from 35 to 42 m.p.h. were recorded on trips made on the Hudson River during the early fall months.

When under way this boat has a minimum draft of 3 inches and actually glides on top of the water when running above 15 or 16 m.p.h. It is steered from the interior cabin by a forward rudder and is declared to be controlled more easily than is the ordinary motor boat.

The owner of this boat is Gonzalo Mejia, of Bogota, Colombia, who has a contract from the Colombian Government to carry mail from the port of Barranquilla, on the east coast of the South American State, to the capital, Bogota, which is some six hundred miles inland. The only means of covering this distance is by traversing the Magdalena River which has an average depth of 2½ feet, and is full of weeds and driftwood. It can be readily understood that the ordinary motor boat is not practical for navigation on this river, and at the present time it takes from ten to twelve days for steamers burning wood to make the run between the two cities.

As Mr. Mejia's gliding boat can maintain a constant speed in excess of 30 miles per hour, it is confidently expected that the trip from Barranquilla to Bogota will be made in a trifle over twenty hours, actual running time. The owner has spent four years of constant endeavor trying to get such a boat as he now has, and the Colombian Government has offered large bonuses to corporations and individuals who will design and build some means of transportation suited to the requirements. Several more skimmers will be built at Nyack.

An Amphibious Motor Boat

Out at the Panama Exposition at San Francisco last summer there was an amphibious motor car which attracted a great deal of notice from engineers and laymen alike. This hydro-car was so designed that it could be run on land with the best of them and in the water with equal ability. By means of a special rear axle construction it was possible to shift the power from the driving wheels to a three-bladed screw type propeller—and it is said that this unusual machine took to the water like a duck. A detailed view of the rudder and propeller is shown in the upper picture.

A Hand 38-Miler for Florida

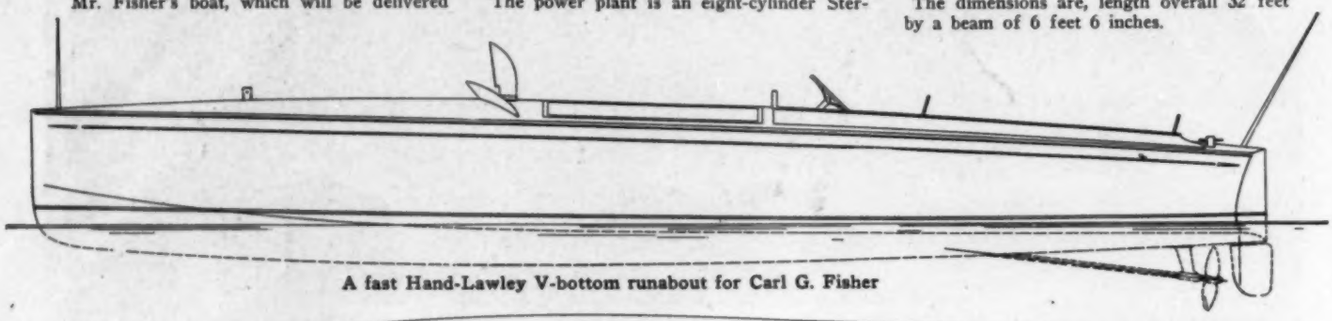
A 32-Foot V-Bottom Runabout Now Being Built at Lawley's for Carl Fisher—Equipment of this High-Speed Boat Includes Full Automobile Control and Electric Starting and Lighting

AT Lawley's yard in Neponset, Mass., there is now under construction a V-bottom 32-footer for Carl G. Fisher from plans by Wm. H. Hand, Jr., of New Bedford, Mass.

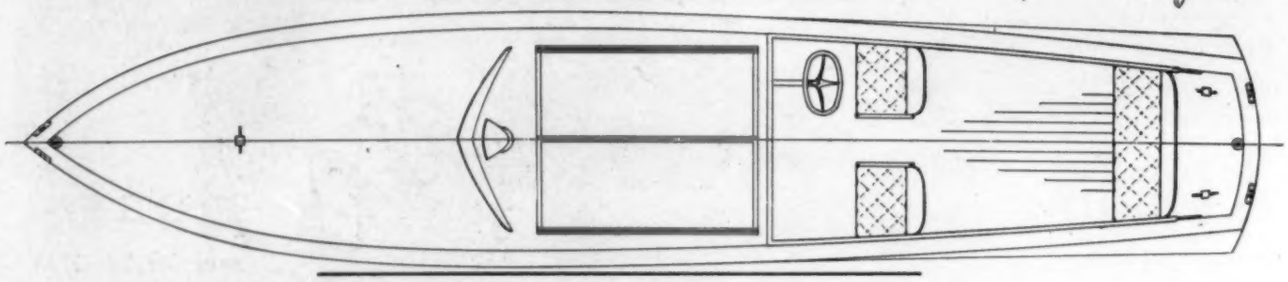
Mr. Fisher's boat, which will be delivered for use in Florida this winter, will be a most attractive craft of the high-speed type. The lines are of the well-known Hand V-bottom model and the boat will be double-planked and finished all in mahogany.

The power plant is an eight-cylinder Sterling racing motor installed with full automobile control, including electric starting and lighting, and the speed of the boat is expected to be in excess of 38 statute miles under normal conditions.

The dimensions are, length overall 32 feet by a beam of 6 feet 6 inches.



A fast Hand-Lawley V-bottom runabout for Carl G. Fisher

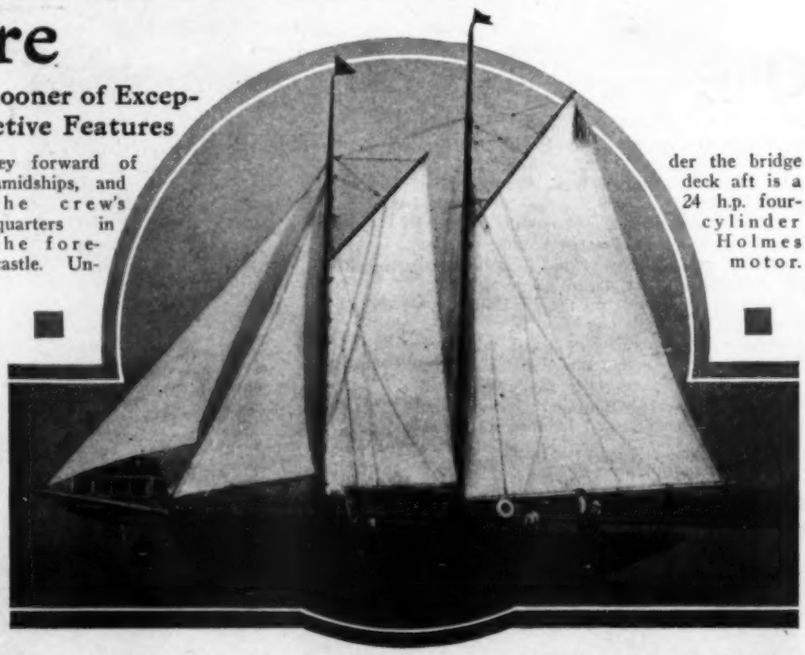


Lismore

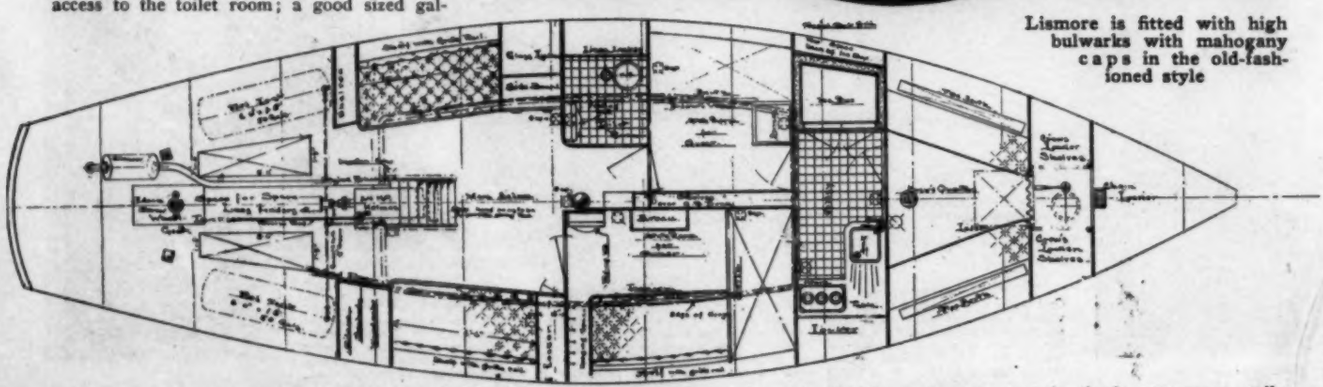
A 56-Foot Pole-Mast Auxiliary Schooner of Exceptional Roominess—Several Distinctive Features

THE accompanying illustrations show the auxiliary schooner Lismore, recently completed by the Wm. Wallin Ship Building Co., of Brooklyn, N. Y., from plans by J. Murray Watts, for Redmond Keresey, Jr., of the Seawanhaka Corinthian Y. C. The boat is 55 feet 6 inches overall, 40 feet on the waterline, 16 feet beam and 3 feet 10 inches draft, the draft being kept low so as to permit cruising in Southern waters. With the centerboard down, the draft is increased to 10 feet. The rig shows a pole-mast schooner of moderate sail plan. The forward deck is flush and there is a narrow mahogany deck-house amidships. The deck is formed of strips of white pine kept bright by holystoning, and high bulwarks with a mahogany cap in the old-fashioned style give good protection to the men on deck.

The accommodations below decks are unusually roomy, consisting of a very large saloon aft with two transoms, sideboard, glass locker, wardrobes, etc.; a double stateroom for the owner; a single guest's stateroom with access to the toilet room; a good sized galley forward of amidships, and the crew's quarters in the forecastle. Under the bridge deck aft is a 24 h.p. four-cylinder Holmes motor.

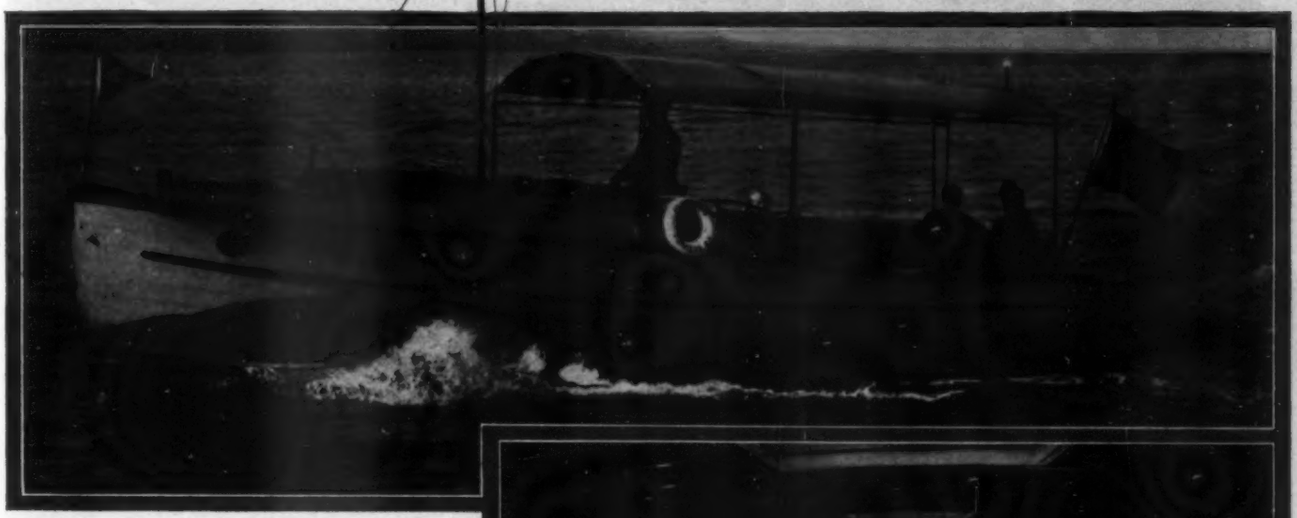


Lismore is fitted with high bulwarks with mahogany caps in the old-fashioned style



Within a waterline length of 40 feet room is found for a large main saloon, owner's double stateroom, guest's single stateroom, toilet room, galley and forecastle accommodations for a crew of four

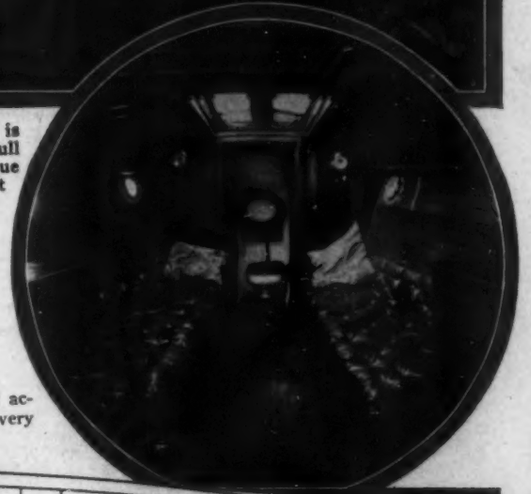
A 32-Foot V-Bottom Cruiser



Fandango, a Hand boat owned by E. W. Marshall, has a cruising speed of about 11½ m.p.h.

FANDANGO, one of this year's interesting cruisers, was designed by Wm. H. Hand, Jr., and built by Arthur M. Gage, of Nyack, N. Y., for E. W. Marshall, of Yonkers, N. Y. This boat is 32 feet over all with an 8-foot beam, and a 4⅜x5½-inch Sterling high-speed type of engine gives it a cruising speed of 11½ miles per hour. The boat was designed for considerable more speed than was developed and the owner is contemplating the installation of a larger motor before the next season.

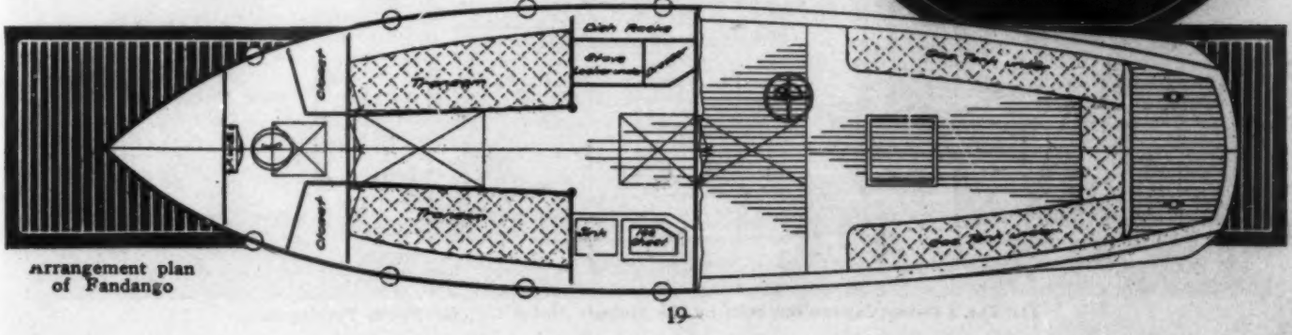
Fandango's chairs and many other articles of equipment were obtained by successful competition in the Prize Contest



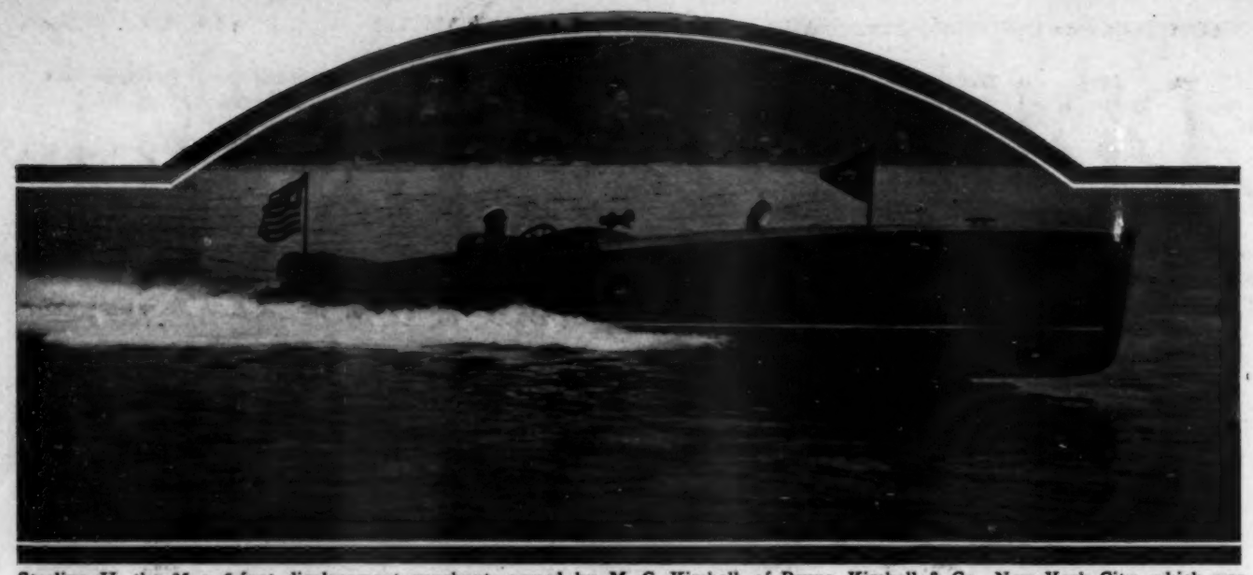
A Sterling motor is installed with full and rather unique electric equipment

The most noticeable characteristic is the exceptionally large cockpit. The owner's experience with boats of this type has shown him how to get the maximum amount of accommodations into the cabin—in fact, every

(*Continued on page 56*)



Arrangement plan of Fandango



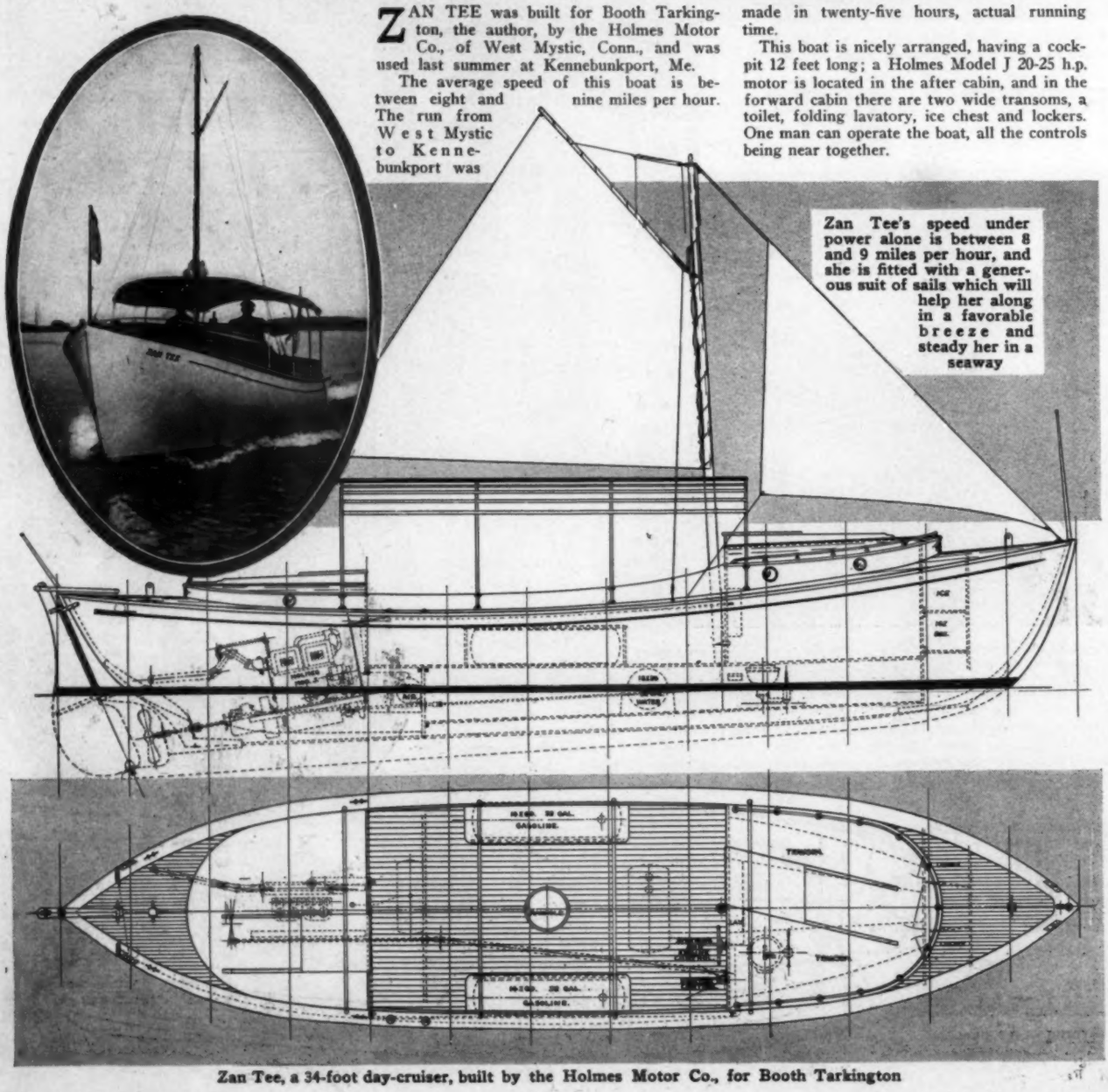
Sterling II, the 35 x 6-foot displacement runabout, owned by M. C. Kimball, of Bruns, Kimball & Co., New York City, which was run nearly 4,000 miles last summer, but has yet to develop its first trouble. This boat is powerd with a 135 h.p. R-1 six-cylinder Sterling motor and shows a speed better than 35 miles per hour. Although accommodating a party of ten persons very comfortably, she won all important races on Lake George the past summer, including a scratch for the championship of the lake

A Cruiser for Booth Tarkington

ZAN TEE was built for Booth Tarkington, the author, by the Holmes Motor Co., of West Mystic, Conn., and was used last summer at Kennebunkport, Me.

The average speed of this boat is between eight and nine miles per hour. The run from West Mystic to Kennebunkport was made in twenty-five hours, actual running time.

This boat is nicely arranged, having a cockpit 12 feet long; a Holmes Model J 20-25 h.p. motor is located in the after cabin, and in the forward cabin there are two wide transoms, a toilet, folding lavatory, ice chest and lockers. One man can operate the boat, all the controls being near together.



Zan Tee's speed under power alone is between 8 and 9 miles per hour, and she is fitted with a generous suit of sails which will help her along in a favorable breeze and steady her in a seaway

Zan Tee, a 34-foot day-cruiser, built by the Holmes Motor Co., for Booth Tarkington

PRIZE CONTEST in QUESTIONS & ANSWERS

Advice for the Beginner

What a Man Should Learn After Buying His First Motor Boat—Book Knowledge and an Intimate Acquaintance With the Motor Necessary—The Simple Principles of Boat Operation

THE PRIZE CONTEST—Answers to the First Question in the November Issue

"From the Bottom Up"

(The Prize-Winning Answer)

THE "bottom" of the motor boat game should be learned as follows: First, the motor. The beginner, having secured a boat, should first learn the principles of his type of engine. For this purpose, manufacturers' literature usually is admirable in that it is especially adapted to the non-technical reader. With this as a text, and the actual engine before him, the novice can quickly learn the names and functions of the different parts of his engine. He should then practise running and controlling it, with the maker's instructions constantly in reference, the boat being made fast to a dock during this period.

Second, the language of boating. The knowledge necessary to a mastery of any art must be got partly by reading, but mostly through intelligent watching, questioning, and listening to those who know and practise the art. To understand what one observes and to question intelligently, it is absolutely essential to know the meanings of terms. The best way to accomplish this is to read a magazine of motor boating and, as each new word is encountered, to look it up in a good general dictionary. Topics should be selected relative to the construction, description, and operation of the type of boat which the beginner has bought. In this way he will gain some useful facts at the same time that he is acquiring a boating vocabulary. Before taking his first trip, he should, in the same way, read the pilot rules relating to his class of boat.

Third, running the boat. Experience is a dear teacher, except when it is the experience of some one else. It will, therefore, pay, especially for the first trip and if the boat is other than small and of moderate speed, to take along an experienced motor boatman until some facility in handling the craft is achieved. Much can be learned through diligent questioning under these circumstances that would make but little impression if related on shore.

Last, I would teach the tyro two knots, the bowline and the clove hitch, and show him how to make a line fast to a cleat or a bitt effectively. Then I would turn him loose with my blessing and the following words of advice:

Whatever you do to your motor do not starve it on lubricant.

Always strain your gasoline through chamois, and keep a reserve supply of fuel.

Always carry enough rope to anchor securely in the deepest water you will find, and keep your anchor handy—you may need it in a hurry.

Choose your anchorages or moorings with greatest care, having regard to tide, current, winds and traffic—it is easier to do this than to recover a drifted boat or repair a damaged one.

In all things use caution, especially in unfamiliar waters or under uncertain weather conditions—an error in judgment is more momentous on water than on land.

Preserve good-will and courtesy towards all other boatmen even though yours be the superior craft.

So much for the "bottom" of the game. The "up" must be attained by playing it, by being on the water, by knowing and talking with experienced boatmen and studying their craft, and, last, but not least, by regularly reading a good magazine on motor boating, thereby keeping up with the times.

JULIAN C. SMALLWOOD, Syracuse, N. Y.

Join a Good Club

TO answer this question offhand would require some knowledge of the man who bought the boat. It would be necessary to know his characteristics, so as to be sure just how much we could leave for him to work out for himself. The person in question might be a first-class machinist who was perfectly familiar with the operation of a gasoline engine, but who had never had a boat of his own. Or he might be a man who was not at all familiar with an engine or any of the other devices used in a motor boat. We shall assume, therefore, that he knows very little about anything used on board a boat, and also that the boat and equipment are in good condition when he gets them.

About the best thing to do in the first place is to become a member in some near-by boat club. In these clubs the members are always glad to help out a novice. The next thing to do is to get acquainted with your outfit. This means to get on regular speaking terms with every part of every article. Find out what it is for, why so placed, what it does, and how it does it. If you can't figure out for yourself ask some one who knows. But find out for yourself if you can.

The main part of the boat to get acquainted with is, of course, the engine and its accessories. You should become perfectly familiar with this before starting out alone. Every engine maker supplies an instruction book with his product. This book shows all the parts, how they are placed and what they do; it also gives directions for operating the engine. If you did not get one of these books with your boat, write the maker of your engine and he will send you one.

After you are sure that you are perfectly acquainted with the engine, reverse and steering gear, see that the timer is set for starting and remove one of the spark plugs. If the timer is in the correct position for starting it will make contact for a given cylinder when the piston in that cylinder has passed the dead center and started on the down stroke. If the engine is a four-cycle machine you will have to be sure that this is the firing stroke and not the intake stroke. You can tell this by noting the intake valve. It will be closed on the firing stroke. The timer being set to fire at the right point and connected to fire the cylinders in the correct order, the next thing is the carbureter. If you have no instruction book and no one to set it for you close the needle valve and open it about three-fourths of a turn.

See that you have plenty of oil and gasoline and that all grease cups are full and tight. Now close the switch and start the engine. It should be started and stopped a number of times, until you are familiar with the operations necessary.

It would be well on the first trip or two to take an experienced motor boatman along, but plenty of open water and confidence are about all that are necessary. Just run your boat slowly until you are sure of the steering and control.

In conclusion, the best advice I've ever heard came from an old boatman and was as follows: Keep cool, don't lose your head, obey the rules of the road, and respect the other fellow, so that he will respect you. Be ready with a helping hand and keep smiling.

H. H. B., Schenectady, N. Y.

Questions for the March Issue

1. What are the principal features of a hull of any particular type of boat designed with special reference to seaworthiness?
Suggested by N. C. I., Newburyport, Mass.

2. Explain and illustrate an arrangement of propeller and rudder to get the best results in a runabout.
Suggested by D. E. W., Ithaca, N. Y.

3. To meet the requirements of a new power plant or a change in position of the present motor, explain and illustrate a simple method of changing the location and angle of the shaft hole through the deadwood.
Suggested by C. E. B., Fall River, Mass.

RULES FOR THE CONTEST

Answers to these questions, addressed to the Editor of MoToR BoatinG, 119 West 40th St., New York, must be (*a*) in our hands on or before **January 20**, (*b*) about 500 words long, (*c*) written on one side of the paper only, (*d*) accompanied by the senders' names and addresses. (The name will be withheld and initials or a pseudonym used if this is desired.) Questions for the next contest should reach us on or before the **20th of January.**

The prizes are: For each of the best *answers* to the questions above, *any article* advertised in the *current issue* of MoToR BoatinG, of which the advertised price does not exceed $25, or a credit of $25 on *any article advertised* in the *current issue* of MoToR BoatinG which sells for more than that amount. *(There are three prizes—one for each question—and a contestant need send in an answer to but one if he does not care to answer all three.)*

For each of the questions selected for use in the next contest, *any article* advertised in *this issue* of MoToR BoatinG, of which the advertised price does not exceed $5, or a credit of $5 on *any article* advertised in *this issue* of MoToR BoatinG which sells for more than that amount.

When you send in your answers you must state what you will take for a prize should you win one

Getting Acquainted With the Hull

THE following suggestions are for the average amateur of moderate means who must learn things for himself. Study navigation from any good book adapted to beginners and amateurs during the winter. Make rules of the road and signals, buoys and lights instinctive through very careful study. Determine to obey the law literally in all these matters and avoid any monkeying in details so important. Courses in navigation at Y. M. C. A. schools in many seaboard cities are good for citizens thereof.

If purchasing a new boat, employ a good designer, if possible, thus securing good lines, careful construction and honest contract. Thorough specifications are necessary—study them for weeks or months before signing your papers. "Extras" and "items not in the specifications" cost outrageously. Expert advice costs most in the beginning, but least in the long run and least in the end. "Rule of thumb work" is costly and poor judgment. Inspect the work frequently yourself, and try to see "each stick of wood go in."

If building a hull yourself, secure the help of a friend who knows something of construction, the more the better. Put good money into strength and arrangement of hull and least into panels, moulding and other interior trim. Put good money into a good engine and into gasoline tanks, whistle tank and electric outfit. Design, make, and, if possible, install your own electric switchboard and plan and do your own wiring, as otherwise you will not have what you want and what you know all about. Insist on well designed, made and installed rudder, skeg and steering gear, as strength and reliability therein are never regretted and are as important as life preservers.

Standard equipment of heavy weight renders renewals infrequent through durability, but easy when necessary, because it will always be found. Get a good compass with large card and good binnacle and have an expert correct it.

If purchasing an old boat, add the following points: Pay a builder to inspect hull and engine with you. Get your own answers to the following questions: Is the keel sound or buckled? Are the ribs fast, sound, well spaced and heavy? Is the planking clean and tight? Has the interior been charred by a fire? Is the roof stained with leaks? Is the deck canvas cracked, torn or patched? Do the doors and lockers fit well? Does the hull throw a large bow wave and boiling wake, or glide with little disturbance? Are the measured and claimed speed over a known distance identical? Does the hull roll easily and recover quickly, or heavily and return slowly?

Take the engine number and verify its age. Insist on a long distance demonstration and decline a few minutes or a few miles of demonstration. If possible, go to the factory where the engine was made and learn its parts, peculiarities and adjustment.

These points but scratch the surface of the subject. Thoroughness, study and knowledge are the price of fuller knowledge.

"OLD HAND," New York City

This Winter's Alterations

Interesting Improvements Which Several Readers are Effecting in Their Boats During the Off Season—Converting a Sloop Into a Motor Craft—Re-arranging the Open Boat, Etc.

THE PRIZE CONTEST—Answers to the Second Question in the November Issue

Converting a Sloop

(*The Prize-Winning Answer*)

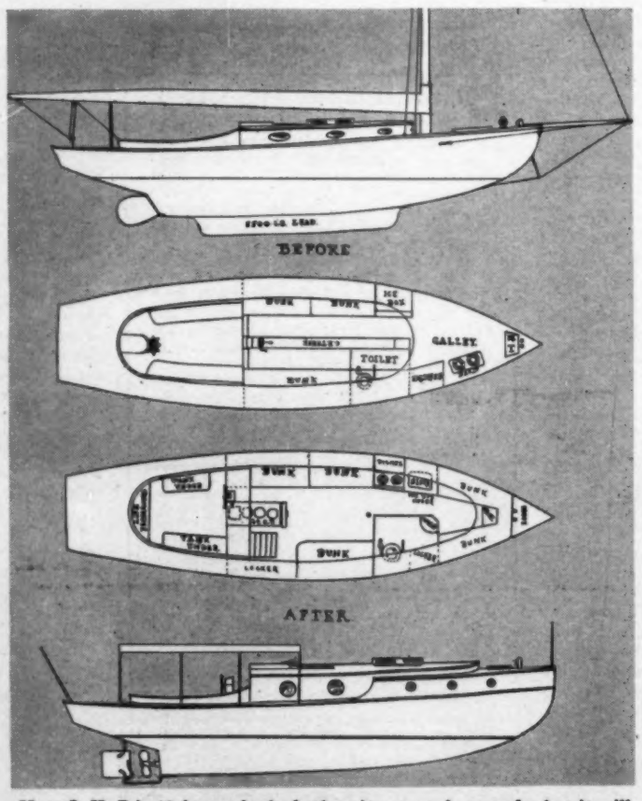
I WANTED comfort and a reliable nine-mile speed, and while I had the idea of changing my 40-foot sloop into a motor boat to get these, it was not decided upon until a blow last September caused a heavy cutter to drag down on my boat, her bowsprit wrecking things in general. The mast, broken boom, gaff, bowsprit and torn sail were all removed and the boat was hauled ashore.

The only thing that worried me was whether the fastenings in the keel were sufficiently off center to permit my boring a shaft hole. I unshipped the rudder and following instructions given in an article on boring the shaft log in the March, 1913, issue of MoToR BoatinG, was pleased to find the auger go through without a hitch.

Being thus encouraged in my venture I proceeded to remove the 5,500 lbs. of outside lead ballast by unfastening the twelve bolts which held it to the keel and lowering it by means of two screw jacks.

I then took the measurements of the hull and laid them down one inch to the foot. To this I added the cabin plan, a flush-deck trunk cabin combination being decided upon to avoid a top-heavy appearance, and still obtain the very desirable six foot of headroom throughout. This plan has enabled me to get the exact dimensions of the lumber necessary for the new cabin, and a crude job will not result, as is the case in most sailboat conversions.

While planning care was taken to provide for the use of many old parts, such as the skylight, hatch, carlins, decking and companionway, which last will have to be made narrower, as it now permits entrance on both sides of the centerboard trunk. The oak board forming the front of the original trunk cabin will have a little greater bend put in it, so that it can be used for the new job.



How J. K. B.'s 40-footer looked when it was a sloop and what it will be like with the alterations completed

Regarding the interior arrangement: Previously the entire portion of the boat forward of the cabin was used as a galley. It had three-foot headroom when the hatch was closed, which meant cooking on your knees. In its place two trunks will be built in, rather high, to permit locker space under, and a locker between, forming a seat, will be handy for shoes, rubbers, etc.

The toilet, with only four and one-half feet headroom, poor light and ventilation, was useless as a dressing room. When reconstructed this will have full headroom, also plenty of light and air from the one swinging port (the old one was fixed), and the skylight, which will be placed directly over it. A washbasin will be installed, and hereafter cleaning up will not have to be done in the cockpit.

The galley will be opposite the toilet. It has been concentrated so far as space is concerned, and an enameled sink connected to the icebox drain makes the rattling dishpan (always in the way) unnecessary. If found desirable this compartment will be separated from the cabin and forward stateroom by means of two swinging doors.

The main cabin, when finished, I imagine will appear about twice as large as it was. There will be no centerboard trunk to block up the middle, but full headroom and extra space aft under the bridge deck in the cockpit. The port bunks will extend under this bridge deck, and as a result the present cushions will not have to be cut, which is also

the case with the starboard bunk, the shortening up to permit room for the companionway stairs not affecting the cushion, which is made in two pieces.

The engine, a rebuilt 24 h.p., three-cylinder, four-cycle machine, paid for out of the proceeds of the lead ballast, will be entirely boxed in, and the controls led to the steering column on deck. Gas tanks will be placed under the cockpit seats, and a power whistle and dynamo will about complete the equipment.

A pipe awning and galvanized iron rudder equipment to take the place of the old wooden one, the removal of which adds materially to the room in the cockpit, will complete my task, and while it is not a simple one, it will not be expensive, owing to the highly satisfactory figure which I secured for the lead.

No more bumping of the centerboard in the trunk while you're trying to sleep, spare power and loads of locker and living space. What more could one ask?

J. K. B., Brooklyn, N. Y.

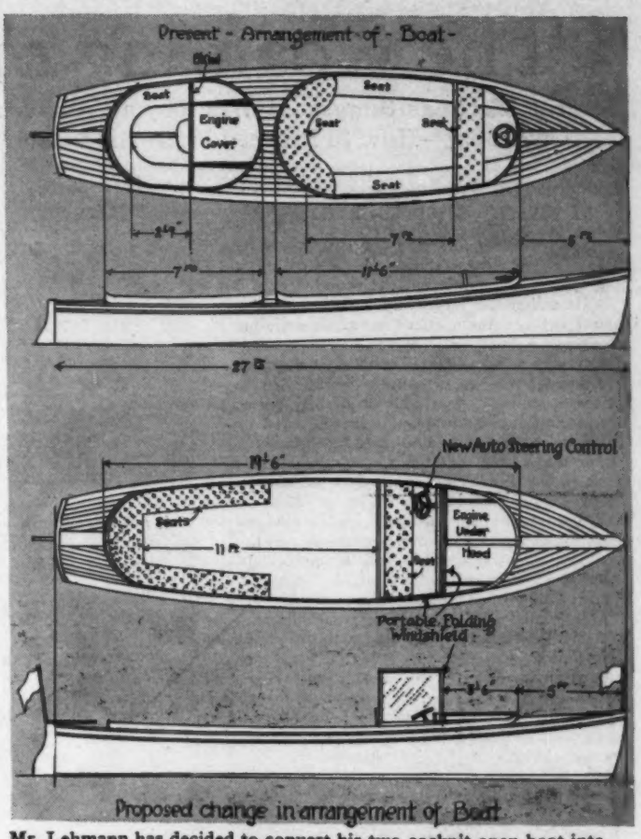
Re-arranging an Open Boat

DURING a season's experience with a 27 by 6-foot 3-inch open motor boat, divided into two cockpits, the after one for the engine, and the forward one for passengers, the following faults were found: In the first place the weight of the engine so far aft, together with the narrow cutaway stern, caused the boat to squat, and being built very full in the bow, she climbed until her keel was out of water when going full speed. Secondly, all the seating accommodations in the engine cockpit were useless on account of dirt and grease. In the third place a two-man control was necessary, as the steering was done from the bow.

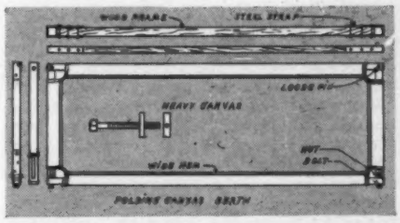
To remedy these faults the following alterations were decided upon: First, the engine is to be moved forward just aft of the forward coaming, as shown in the sketch, and enclosed by a bulkhead and hinged covers. The old bulkhead and seat in the center of boat is to be removed, thus making one large cockpit with a continuous floor. Eighteen inches from the engine bulkhead there will be a cross seat under which there will be room for the gasoline tank and locker. From a point seven feet forward from the after end of the coaming, and running from one side around back of the cockpit to the other side, there will be one continuous seat. This arrangement of seats leaves an open space of five feet near the center of the boat that can be used for chairs.

The bulkhead aft of the engine will be double, with an intervening space of six inches. A four-inch slot, running athwartships, will be cut into the deck above this space, allowing a windshield to be lowered into it, while enough room will be left for storing a flat board, to be used as a table, set up between the rear side seats and supported on portable legs, fitting into sockets in the floor.

By placing the engine forward, the shaft is allowed to be brought more nearly horizontal, and the reboring of the deadwood presents very little difficulty in this case, and does away with the necessity of a universal joint thrust bearing. The floor will be raised from its present position to cover the shaft. The flooring in front of the cross seat is to be raised six inches higher still, to cover clutch and reverse gear, and full automobile control will be installed to one side. This new arrangement will give a comfortable seating capacity for fifteen persons, with ten feet six inches of clear walking space, as compared to ten persons and six feet of walking space with the old arrangement. In addition the boat will ride in a more horizontal position, which will undoubtedly improve the speed and riding qualities. The controls will all be forward, affording one-man control, and thus eliminating the last of the faults.



Mr. Lehmann has decided to convert his two-cockpit open boat into a runabout with automobile control



Details of Mr. Christie's K-D canvas berth

WALTER LEHMANN
New York City

Installing a Canvas Berth

AT the end of the season I had in mind several improvements to be carried out during the coming winter. These, it is expected, will add to the comfort and pleasure next season, besides keeping up interest in the boat during the winter.

The first of these is in the steering seat. This is a permanent seat built partly across the cockpit with gasoline tank under. The steerer is of the auto type with all controls on the wheel, and the reverse lever is located conveniently near the end of the seat. The boat is of the raised-deck type, and the steering seat seems to be too low to allow a good view ahead when running in harbors among small boats. Often a life preserver was placed under the cushion, but this made the seat so high that our feet could not rest comfortably on the floor.

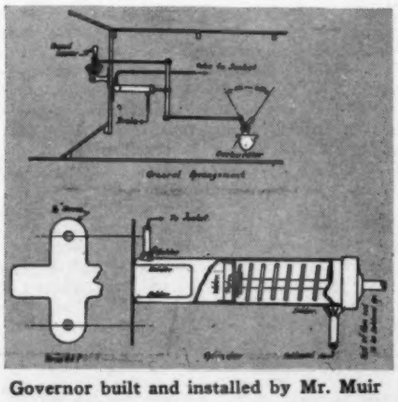
Several plans have been considered, among them that of removing the seat and using a stool. Finally I have decided to raise the seat by adding about four inches to the top. One side will be left open, and the space will make a useful locker. Then a small grating, six inches high, will be provided between the seat and the bridge deck.

Another thing to receive attention will be the galley. The space for the kerosene vapor stoves which are used will be lined up with zinc, making it fireproof and easy to clean. A ventilator and hood will be placed directly over the stoves to carry the heat from the ceiling.

A work table will also be provided for the galley. This will be arranged to fold up in front of the dish racks and shelves. As these are all enclosed with a pair of small doors when not in use, the table will be hinged to swing up just inside the doors, so as to be entirely out of the way.

The transoms in the cabin have not proven entirely satisfactory to sleep on. I suppose a cushion with a nice soft pine board under it ought to be considered a good bed on a small boat, and perhaps it would too, if one were on board long enough to become accus-

(*Continued on page* 50)



Governor built and installed by Mr. Muir

The Coaming of an Open Boat

Several Methods Suggested Whereby an Amateur Can Bend, Block and Fit a Coaming to His Own Boat—How to Proceed With the Various Types: Square, Round and Pointed Front

THE PRIZE CONTEST—Answers to the Third Question in the November Issue

Fitting the Coaming

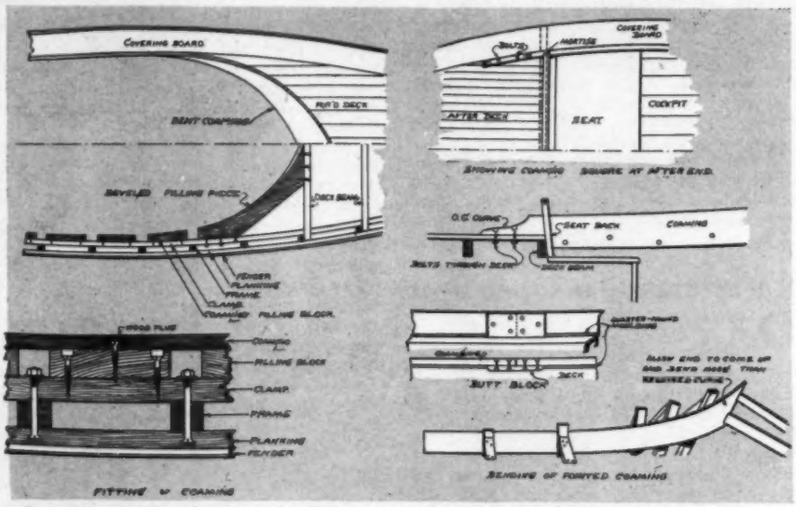
(The Prize-Winning Answer)

THE drawings show the fitting of a pointed coaming, but the rounded type is installed the same way and the work is easier because there is not so much beveling to do.

Every open boat is fitted with clamps, which are wooden stringers running the full length of the boat inside, even with, or slightly below, the sheer line. These clamps are fastened by bolts or rivets extending through planking, frame and clamp. There is generally a short deck fore and aft, for which deck beams are fitted. The coaming is either pointed or rounded at the forward end and round or square at the stern, the square being the easiest to fit and permitting of the convenient installation of a seat at the stern.

A couple of wooden filling pieces are screwed and bolted to the forward deck beam and the clamps, as shown in the drawings. These filling pieces are to be cut to the same curve the coaming is to take. Then filling blocks are fitted along the clamps so as to clear the bolts or rivets, and are fastened with screws. The width of these blocks depends upon the width of the deck between the side of the boat and the coaming; if the deck is to be relatively wide short deck beams will have to be fitted along the sides and a wooden stringer fastened along the inside ends of these beams and the coaming fastened to the stringers.

For the average boat blocks will be used, and supposing these are in place and the decks laid and trimmed off around their inside edges, the next thing to do will be to bend the coaming, after steaming it in a steam-box long enough to make it pliable. No attempt should be made to bend it into place in the boat; a substantial bending form should be made and strongly fastened down. The lumber should be bent more than is required, for it will spring back to a certain extent when cold, and if bent more than needed can be bent back with ease. If the pointed coaming is to be used, by allowing the forward end to come up while bending, it will bend more easily and at the same time give the required rake to the end.



Complete working drawings for fitting a coaming according to Mr. Parker's method

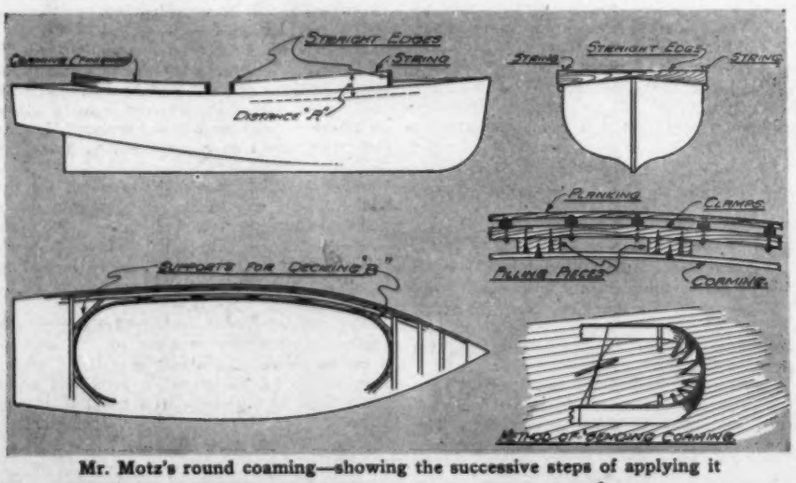
The coaming is generally made in two lengths to the side, the pieces being joined by a butt block of the same material on the outside. This block should be fastened by screws driven in from the inside with the heads countersunk about a quarter of an inch and covered with hardwood plugs.

Great care should be taken in fitting the curved portion to make a tight seam between the coaming and filling piece, for water coming up over the forward deck is likely to leak through here. Hold the coaming temporarily in place with screw clamps and determine where the filling piece needs shaving off, then remove the coaming, pare off the filling piece with a draw-knife or spoke-shave and repeat the process until a good tight fit is made.

Fasten the coaming in place with screws into the filling blocks, countersink the heads and cover with wood plugs, set in spar varnish and trimmed off smooth.

If it is fastened square across the stern, mortise the athwartship piece into the side pieces and carry the sides aft a little ways, ending them in an ogee curve, the ends held by countersunk bolts down through the deck. A quarter round moulding bradded in between the coaming and the deck completes the job.

H. H. PARKER,
Oakland, Cal.



Mr. Motz's round coaming—showing the successive steps of applying it

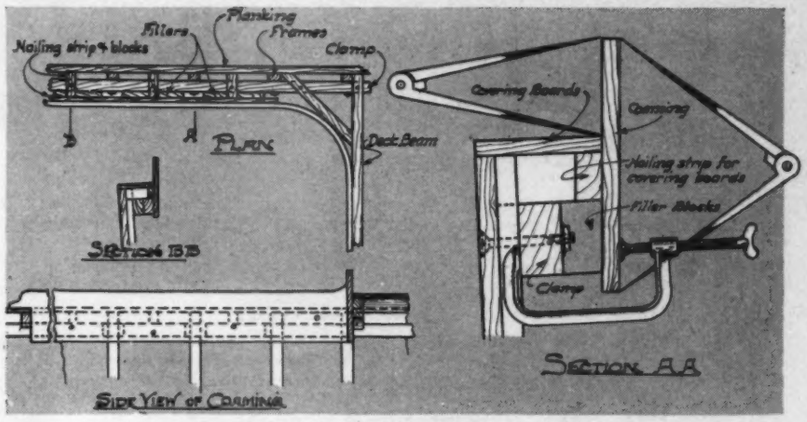
When There is Much Sheer

ON an open boat with a large amount of sheer or rise to the bow and stern, there is necessarily some waste in fitting the coaming to conform nicely to the sheer line, and the plan herewith outlined is intended to minimize as far as possible this waste.

As the decks will extend to the coaming, first decide on the length of deck desired. A good proportion is one-fifth of the boat's length for the forward deck, and about one-eighth for the after deck, with the deck extending the length of the boat on either side, at a width to suit the owner's taste for appearances.

For best appearances the coaming should be of uniform height, measuring from the decks, and where there is considerable crown to the deck beams the coaming should also conform to the crown.

To determine the width of lumber required, place a straight edge across the boat at the forward deck with its top edge at a height equal to the height of coaming desired, measuring from the highest point in the crown of the deck. Level up this straight edge with blocks or wedges, so that it will be equal in distance above the gunwales on the opposite sides of the boat. This will be made clear by referring to the drawing. Midway aft another straight edge is placed in the same man-



Mr. Kelly successfully fitted his coaming as in the above

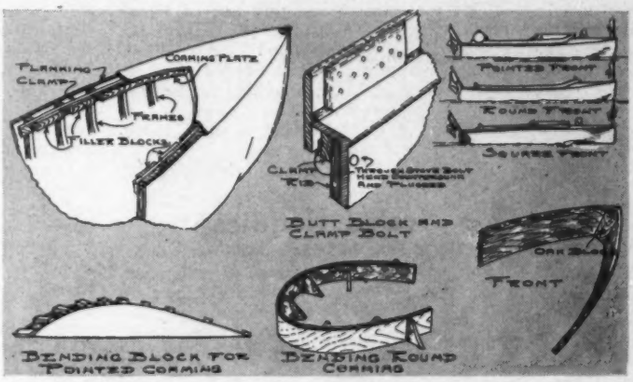
ner, and a string stretched fore and aft between them, so as to lie parallel to the sides of the boat, and touching the tops of the straight edges. Now measure from this string to the lower edge of the clamps, selecting by trial the spot where this distance is the greatest, as shown by distance *A* in the sketch. The coaming should cover up, but not necessarily extend below the lower edge of the clamps. This distance is the width of lumber required for the front half of the coaming. Repeat the operation at the after end of the boat to determine the width required for the after coaming.

Now determine the width of the side decks desired, and fasten blocks or filling pieces to the clamps about eighteen inches apart, to which the coaming will be fastened as per sketch. The thickness of these blocks will depend upon the width of deck selected. We are now ready to decide upon the curvature of the front part of the coaming. This curve need not be a true semi-circle, but may be made somewhat flat in the center with short radius curves at the corner to suit the individual taste of the owner. It is best plotted on heavy paper and held in position to determine the proper size, after which the supports for the decking *B* should be fitted in place, as shown in the drawing. The curve of the after coaming is determined in the same manner.

The joint between the after and forward coamings will be located at the point decided upon in the placing of the middle straight edge as described in the beginning of this article. Now measure the length of coaming required by stepping off the distance around the filling pieces, and the paper forms for the curves, allowing about a foot extra for fitting on both the forward and after pieces.

Purchase only air-dried lumber for the coaming, as kiln-dried stock will not readily steam-bend. A good method for bending the coaming is to nail blocks directly on a wooden floor to conform to the curves of the paper forms, mentioned above, and bend on this, as shown in the sketch (page 24).

When thoroughly dry the coaming may be fastened in place with screws into the filling pieces, deck support and deck beams, counterboring each screw and plugging it with wooden plugs to make a workmanlike job. Reinforce the butt joint between the forward and after pieces with a good sized oak block on the outside of the coaming, fastening the block with screws concealed by wooden plugs. The proper height of the coaming may now be marked with a pair of dividers, using the deck as a guide, and by trimming down to the marks a coaming conforming nicely to the sheer and crown of the boat and deck will be left. W. E. Motz, Philadelphia, Pa.



Mr. Huestis shows how to proceed with the various types

Fitting a 24-Footer

IN fastening the coaming on the 24-foot open boat which I built several years ago, the following method was used:

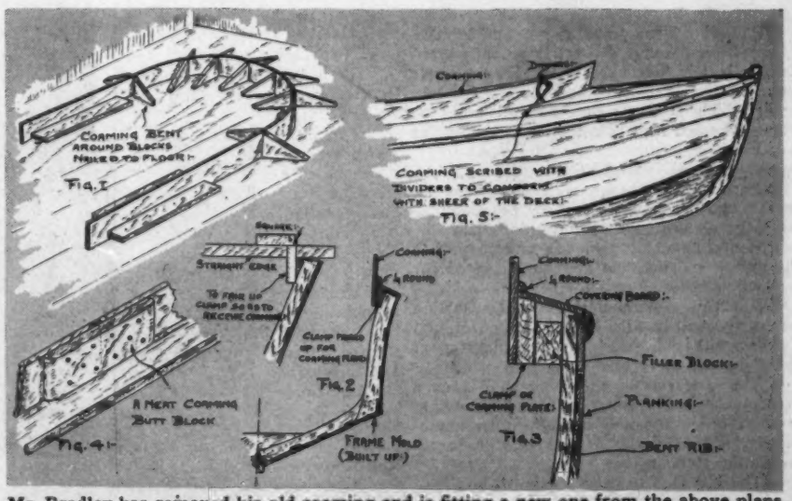
The clamps run fore and aft about two inches below the deck line to allow the forward and after deck beams to rest on them, but at the sides, the deck would not have been wide enough if the coaming were fastened directly to the clamps, so fillers or blocks of wood, the same width as the latter, and the required thickness, were fastened securely to them. These blocks were just long enough so that they fitted in between the through bolts that fastened the sheer strake, frame and clamp, and no gouging out to clear the nuts was necessary. The inside faces of these blocks were planed off to make the coaming set vertically all the way around.

The deck beams adjacent to the cockpit for the forward and after decks had previously been fitted, so that to make an inner support for the side deck or covering boards, a nailing strip, its top flush with the top of the deck beams, was run along the inside top edges of the filler blocks, and fastened to them. The top edge of the sheer strake formed the outer support for these covering boards, and to give them a middle support, short blocks were put in crosswise from nailing strip to sheer strake. The tops of all of this construction formed a smooth, continuous framework upon which to fasten the covering boards.

The curved shape of the coaming at the forward end of the cockpit was now laid out, and the piece steam bent from a 12-inch board. This piece extended back along the sides for about three feet and butt-jointed to the other coaming, with a plate outside securely screwed to each piece, when they were finally put in place.

The curved piece was now clamped in place, and by means of dividers the top edge was marked off three and one-half inches above the deck line, all around. The lower edge was marked off about one inch below the filler blocks at the sides, and the front was made horizontally straight with these, but could have been

(*Continued on page* 52)



Mr. Bradley has removed his old coaming and is fitting a new one from the above plans

RACING STUNTS

This department is now a regular fixture of MoToR BoaTinG. It will be maintained throughout the winter for the benefit of race committees who may be hard put when the racing season rolls around again to invent something to interest their fellow club members in the racing line, and to stir up more enthusiasm in club spirit, which in many localities is at low ebb.

There are no rules governing this department. We want our readers to send us anything in this line which they think will interest others—any little stunt race which has been a success in your club or tended to increase the fun on Club Day. Any ideas you may have for handicapping boats in a race, so that all will have a fair chance to win, will be very acceptable. Put them in simple language so everyone can understand them. We pay at least $5 for every contribution which we make use of and will give up as much space each month as the quality of the answers warrants.

Fish Pond Race

A NUMBER of blocks of wood are stamped with numbers and provided with a good-sized ring in one end of each. The numbers should not run too high, so that if 100 blocks are used they should be made into ten sets running from one to ten. The blocks are taken out and scattered upon the surface of the water, about half a mile from the starting point. At a given signal all contestants rush to their boats, start motors and go after the blocks, which must be fished from the water by use of boat hooks, and must not be picked up by hand. Only two should form the crew of fishermen on each boat.

A second signal and each boat starts for the finish line, the first boat to finish having five points added to the total sum represented by the numbers on the blocks it holds, and the second boat gaining three points, etc. The boat whose blocks and points total the highest score wins. Rules of the road are in force, and any boat not observing them will be disqualified, as will any boat whose fishermen take any fish from the water with the hand or anything else, except the boat hook, or whatever device is specified for scooping in the fish. No paddling of any sort from block to block is permitted, the only propelling power allowable being the motor. An observer should be placed on each boat to see that all rules are carried out.

It will be noted that by numbering the blocks in sets of from one to ten closer scores will result and hence more interest will be displayed.

W. M. O., Willimantic, Conn.

Fast and Slow Race

THIS race is one in which the entrants endeavor to get as far away from the starting line as is possible within a given time, and consume as much time as they can in returning to the starting line. Competition is open to motor boats of all divisions and classes. The preparatory gun is fired, then in four minutes and thirty seconds a red flag or ball is hoisted, and in thirty seconds more the flag is dropped and the starting gun fired, which is the signal for all boats to start. The last boat to complete the course as directed is the winner.

RULES

1. Each entrant shall name a competent observer who shall be assigned by the Committee to go aboard another entrant's boat.

2. Contestants start on a par, and proceed in the prescribed direction at optional speed for —— minutes*.

3. Exactly —— minutes* after the starting gun, a gun will be fired by the Committee, and the flag will be lowered from the flagstaff at the clubhouse or from the Committee boat.

4. The observer on each boat shall keep a careful watch for this signal, and on noting it shall order the helmsman to turn immediately, and head the boat directly back towards the starting line.

5. The last boat to cross the finish line shall be declared the winner, the next to last shall be declared second, etc., provided no cause for disqualification shall be reported regarding these boats by their observers.

6. The following shall constitute cause for disqualification:

(*a*) Failure to turn the boat immediately when ordered to by the observer.
(*b*) Steering any but a straight course on the return trip.
(*c*) Stopping the motor on the return trip.
(*d*) Slipping clutch, throwing out clutch, tampering with reverse gear or reversible propeller, etc., on the return trip.
(*e*) Towing small boats, buoys, buckets, men, women, or any other article or being on the return trip.

This race is an interesting test of motor flexibility. Usually about 50 per cent. of the entrants stall their motors and are disqualified. For this reason it is well to run the event off in two or more heats, especially as the race is over in a short time. The observer's job is important. Slow boats stand an equal, if not a better chance than fast ones.

C. B. R., Philadelphia, Pa.

** This period of time depends upon the sea-room, as well as the speed of the contestants. Two minutes will take a thirty-mile boat just one mile from home.*

Sealed Handicap

THE course for this race is marked by two stake boats anchored in midstream, one five-eighths of a mile above the clubhouse, and the other five-eighths of a mile below. The distance is twice around this course, starting and fishing downstream in front of the clubhouse.

All boats are timed over each lap. After the start of the race two sealed envelopes are handed to the judges, who select one. This envelope contains the number of the lap which is to be taken as the handiicap lap. All handicaps are figured from this lap, using the fastest boat as the scratch boat. After the corrected time for each boat is figured, it has added to it double the variation between the two laps.

The boat having the fastest corrected time is given the prize. In case of a tie the tied boats are required to run another lap and the variation of this lap from the handicap lap is doubled and added to their corrected time.

RULES

Open to all boats enrolled in the —— Club.

Course—Five miles.

Preparatory Signal—One gun and red flag hoisted on clubhouse.

Starting Signal—One gun and red flag, dropped five minutes after preparatory gun.

Crews—Two men in each boat.

Rules—Rules of the road.

No timepieces or speed indicators permitted on any boat.

H. H. B., Schenectady, N. Y.

What-Not-Race (Free-for-All)

EACH captain shall provide his boat with the following extra equipment: one dink with oars, one anchor with necessary rope and one life preserver. The boats shall be anchored in a straight line parallel to the shore and 200 yards off, in front of the clubhouse. After anchoring the captains will come ashore and secure their dinks at the dock. The engines must not be left running, nor must any one be aboard the boats. The captains will take their seats on a bench provided. At the starting signal the captains will go to the dock, cast off their dinks and row to their respective boats. After securing the dink so that it can be towed, start engine, get up anchor and run once around the stake boat, which is anchored about one-quarter mile off. On the way out the captain must throw over his life preserver and must pick it up on the re-

and NOVEL HANDICAPS

Slide, a 16-foot V-bottom, powered with a 28 h.p. Red Wing

turn trip. The life preservers must have the name of the boat marked on them and each captain must pick up his own. No boat hooks or other aids must be used. Having secured his life preserver, he must then run to anchorage, drop anchor, stop the motor, row ashore, fasten the dink at the dock and take a seat on the above-mentioned bench.

The first man on the bench wins, provided he has complied with all the rules.

RULES

1. The engine must be started before the anchor is raised.
2. Each boat must go fairly around the course without touching the stake boat or any other boat.
3. The dink must be towed entirely around the course.
4. The stake boat must be left to port in turning.
5. Each captain must recover his own life preserver.
6. Life preservers must be thrown overboard within 100 yards of the stake boat.
7. There shall be no protests considered.

H. H. B., Schenectady, N. Y.

Squadron Race

A SQUADRON race is one where the available boats (of all classes) in a club fleet are divided into two squadrons of equal number; these are designated as the blue and the white squadrons. The preparatory gun, as usual, is fired five minutes before the start of race. On the starting gun the boats proceed around the club course (preferably two or more laps of a short course of say from two to four miles per lap), and as each boat finishes the prescribed distance, the squadron to which she belongs is credited with one point plus as many points as there are boats left to finish in the combined squadrons. The squadron gaining the greater number of points is declared the winner. Each boat of the wining squadron shall recive a prize.

RULES

1. The Race Committee may appoint, or the boat owners may elect, two captains, one for each squadron. These captains shall draw lots for first choice, then choose alternately from the available boats of all types and sizes until the boats are all chosen, provided, of course, that the squadron captains shall have chosen the same number of boats.
2. Withdrawal, or failure to start, of a boat in either squadron will cause the squadron to which the boat belongs to lose whatever points the boat might have earned had she started and finished.
3. There will be a preparatory gun, followed in four minutes and thirty seconds by hoisting a red flag, and thirty seconds later by dropping the flag and firing the starting gun, which is the signal for all boats to start.
4. No time will be taken. The squadron with the larger number of points wins.
5. After a boat finishes, she shall be considered out of the race, but may go back over the course and by towing, or in any other manner, assist one or more of her squadron mates to complete the course. In so doing the boat returning shall keep clear of all contestants, any fouling or interference on her part with boats of the opposing squadron shall cause a loss from her squadron's score of the points the offending boat has already scored.
6. No boat may do any towing until she has finished the course herself. As a "tow" finishes, the first boat being towed shall score, and not the boat towing, which is considered out of the race. (See section 5.)
7. Each boat may carry as many or as few in the crew as desired.
8. Blue or white pennants or flags will be provided for each contestant to fly at his jackstaff. The contestant must fly his distinguishing flag, and return it after the race, as otherwise the flag will be charged to the owner of the boat.
9. Contestants during the race are subject to the racing rules covering right of way, fouling, overtaking, passing and rounding marks, overlaps, altering course, etc., as prescribed by the A. P. B. A., rules.
10. A suitable prize will be given to each boat in the winning squadron. Prizes may be flags, an order on the local ship chandler or supply man for gasoline or other supply, a can of spar varnish, or other similarly useful article.

This race will be found interesting to contestant and spectator alike, and it offers a good opportunity for practice in handling lines, clever helmsmanship and general seamanship. It frequently happens that the squadron composed of the slower boats proves the winner, due to better handling of the boats. Each contestant's chance of getting a prize is "fifty-fifty."

R. B. C., Cape May, N. J.

This department of Stunt Races and Novel Handicaps is being run each month in MoToR BoatinG and every reader is requested to take part and send in any suggestions he may have. We pay $5.00 for each contribution which we make use of—Editor.

The New 16 H. P. Kermath

Latest Addition to a Popular Line of Runabout and Cruiser Engines Differs in Several Respects From its Predecessors—Enclosed Moving Parts One of the Features

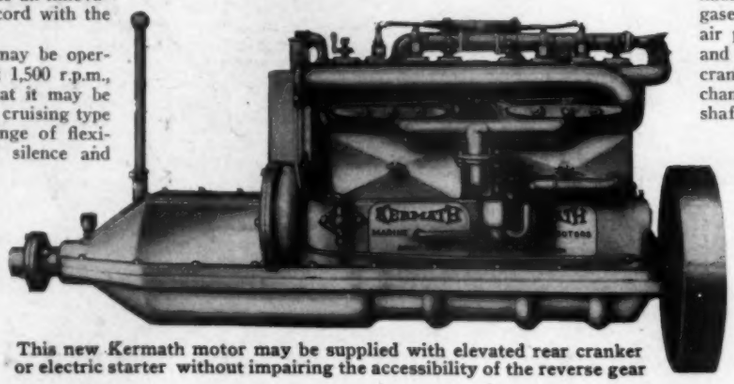
THE Kermath Mfg. Co., of Detroit, Mich., is just introducing a new 16 h.p. motor which brings this company's line up to three models ranging from 12 to 20 h.p. This new motor differs in several respects from the famous 12 h.p. Kermath, the oil tank, for instance, being mounted on top of the motor instead of in the oil pan. The complete enclosure of every moving part (with the exception of the flywheel) is an innovation which is strictly in accord with the most up-to-date practice.

This model is one that may be operated with perfect safety at 1,500 r.p.m., while its design is such that it may be run down to 600 r.p.m. in a cruising type of boat. This extreme range of flexibility and its features of silence and cleanliness are among the strongest points advanced for the new motor.

There are four cylinders cast in pairs having a bore and stroke of 3¼ x4 inches, and the motor is credited with the following power ratings: 16 h.p. at 1,800 r.p.m.; 18 h.p. at 1,000 r.p.m., and 21 h.p. at 1,200 r.p.m. The reversing gear, which is built right on to the end of the engine crankshaft, is of Kermath make of the planetary type, having an 8-inch drum with heavy manganese bronze reverse band, and a five-plate multiple disc forward clutch. The engine is provided with large hand-hole plates on both sides, and the magneto and water pump are above the top of the crankcase and away from all dampness caused by bilge water.

The camshaft drive and the magneto shaft drive are by link-belt silent chain. The full water-jacketed exhaust makes a very desirable feature for a cruising boat, and through interests of economy and efficiency the intake manifold is cast as part of the exhaust manifold. The incoming gases are further heated from a hot-air pipe attached to the carbureter and taking the warm air from the crankcase and the valve-operating chamber. The crankshaft, camshaft and connecting rods, as in the other two Kermath models, are drop forgings, and the bearings throughout are of die-cast nickel babbitt and are interchangeable.

When required, a rear starter is mounted on top of reverse gear without interfering with the adjustment feature of the latter, or an electric starter may be provided in the same place, with a silent chain running in oil.



This new Kermath motor may be supplied with elevated rear cranker or electric starter without impairing the accessibility of the reverse gear

Wright Heavy-Duty Motors

Four-Cycle Valve-in-the-Head Engines Made in Owensboro, Ky., and Built for Right and Left Hand Installation—Ignition by Bosch Low Tension Magneto and Magnetic Spark Plugs

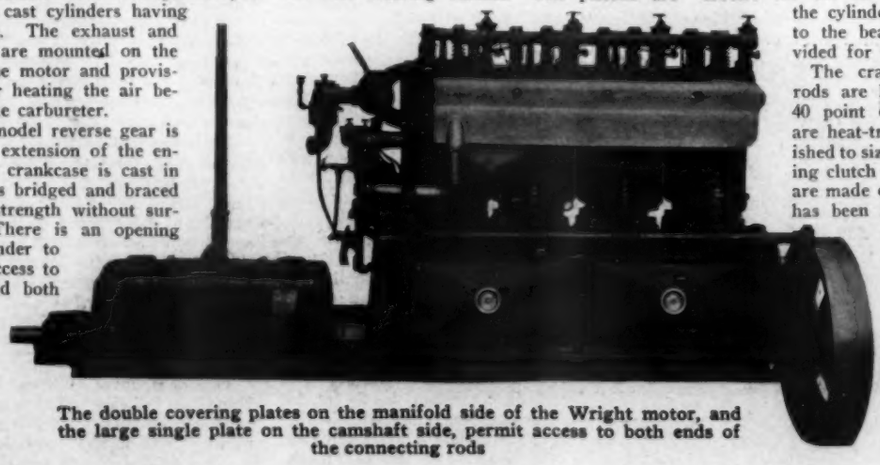
THE Wright Machine Co., of Owensboro, Ky., is putting out a high-grade heavy duty motor of the four-cycle type, which may be obtained for right and left hand installation. The model shown in the accompanying illustration is a four-cylinder job with separately cast cylinders having overhead valves. The exhaust and inlet manifolds are mounted on the same side of the motor and provision is made for heating the air before it enters the carbureter.

An enclosed model reverse gear is mounted on an extension of the engine base. The crankcase is cast in one piece, and is bridged and braced to give ample strength without surplus weight. There is an opening under each cylinder to give complete access to the bearings and both ends of the connecting rods. The camshaft side of the motor is covered with a single plate, and double covering plates are used on the manifold side.

The cylinders are cast with detachable heads and are made of a special mixture to give them a smooth close-grain finish, and to get the best wearing results. The pistons are made as light as is possible consistent with the required strength, and the piston pins are steel, hardened and ground, and are rigidly secured in the pistons by set-screws and locknuts. The pistons are hollow, forming reservoirs for the oil which is collected from the cylinder walls and is conveyed to the bearings by oil ducts provided for that purpose.

The crankshaft and connecting rods are hand-forged from 25 to 40 point carbon steel billets, and are heat-treated and accurately finished to size. All gears in the reversing clutch are of the spur type and are made of a grade of steel which has been found to be best suited for the requirements.

Wright motors are made in three, four and six-cylinder models and in cylinder sizes of 6 x 7½ and 7½ x 9 inches, the two types operating at 550 and 475 r.p.m. respectively, and the six engines ranging in power from 30 to 90 h.p.



The double covering plates on the manifold side of the Wright motor, and the large single plate on the camshaft side, permit access to both ends of the connecting rods

The Newest Sterling--Model F

An Entirely Enclosed Job Which Has Been Shipped Abroad in Large Numbers in the Last Few Months—Having Eight 5½x6¾ Inch Cylinders, It Delivers 200 H. P. at 1,500 R. P. M.

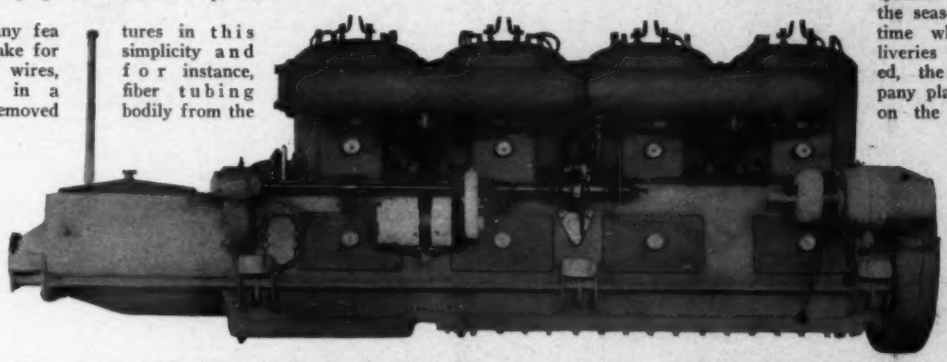
UP at the works of the Sterling Engine Co., in Buffalo, they have been building a new type of eight-cylinder motor which has met with the approval of several foreign governments, and this motor, known as the Model F, is also receiving its share of popularity in the domestic trade. The Model F is an entirely enclosed proposition, including the flywheel, electric starter, reverse gear, valves, etc. The cylinders are cast in blocks of two and are mounted on a one-piece manganese bronze base, having a gray iron or aluminum lower base which extends aft to include the reverse gear housing. The crankshaft, which is 2½ inches in diameter, is drop-forged from chrome nickel steel, is double-heat treated, and is tested to an elastic limit of 90,000 pounds. The cylinder bore is 5½ inches and the stroke length is 6¾ inches, the motor developing its rated 200 h.p. at 1,500 r.p.m.

There are many features in this engine which make for simplicity and reliability, the wires, for instance, being enclosed in a fiber tubing which may be removed bodily from the motor by the manipulation of a few bolts. The two carbureters are water jacketed and the air leading to the intake manifold is further heated by a connection from the exhaust manifold; a tube is provided for drawing oily and smoky vapors from the crankcase. Other features include the absence of tubing on the tops of the cylinders, the extension of the cylinder jackets to the base with petcocks provided for draining at the lowest point, and a special spark-retarding device.

Oiling is effected in this new motor by a combination of splash and force-feed lubrication. There is a sump pit on the after end of the engine with a float connected with an indicator at the rear end of the machine which shows at all times the height of the oil in the reservoir. A gear pump raises the oil from this pit and forces it through a large filter from which it is carried through a brass distributing tube with branches to the main bearings and thence through the hollow crankshaft to the connecting-rod bearings, and to the clutch. At the forward end of this main oil tube there is a release valve which is set to maintain a certain pressure in the oiling system. At this release valve there is a connection for a gauge showing the amount of pressure being maintained.

The ignition on this motor consists of a two-spark Berling magneto which, with the special retarding device, gives a great range for advancing the spark or retarding it for starting. Regular equipment of this motor includes a two-unit starting and lighting system, the charging dynamo being driven from the same shaft that drives the water-circulating pump. This motor weighs 2,100 pounds and is especially recommended for express cruisers ranging in length up to 55 or 60 feet.

In addition to this motor the Model F is also made in eight cylinders in a 6¾ x 9-inch cylinder size. Later in the season, at about the time when spring deliveries will be demanded, the Sterling company plans to have also on the market a six-cylinder and a four-cylinder machine of the F type, these motors having the cylinder dimensions of the motor illustrated herewith as well as the same design.



The new Model F eight-cylinder Sterling is designed for use in express cruisers ranging in length up to 55 or 60 feet

The New Harbeck Models

Four Entirely New Engines Designed by F. S. Deusenberg on the Horizontal Valve-in-Head Principle and Built by the Loew-Victor Engine Co.—Power Range From 75 to 400 H. P.

THE marine world has awaited with a great deal of expectancy the structural details of the new Harbeck models which the Loew-Victor Engine Co., of Chicago, Ill., first announced about the middle of last summer. These motors were designed by F. S. Deusenberg, who has achieved fame not only in the marine field, but in other realms of engineering practice, and the Loew-Victor Co. may well feel that it has set a new mark for itself by their production.

The new motors—there are four of them—are built according to the Deusenberg horizontal valve-in-the-head principle, some of the advantages claimed for this system being increased power per cylinder volume, less noise and a more efficient arrangement of the valve-actuating mechanism, with better provision for lubrication, resulting in longer wear.

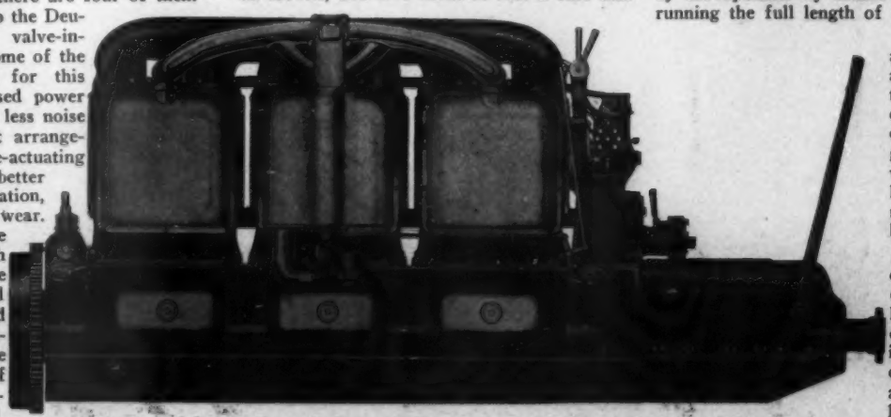
The cylinders are cast two en bloc, with openings (which are subsequently covered with plates) provided on the side for securely holding the cores at the time of casting. This arrangement, it is said, precludes the possibility of errors in the casting. The valves are carried horizontally in the heads and are actuated by rocker arms driven from a single drop-forged camshaft with cams forged integrally. The entire camshaft and rocker arms and rollers are continuously flooded in a bath of oil.

The crankshafts are of hammer-forged alloy steel, carefully balanced, and ground at all bearings. The flange for holding the flywheel is forged integrally with the crankshaft proper. The crankcases are of semi-steel in all models, and it is declared that a case that gives ample strength with minimum weight has been provided. The shaft is carried on the upper half, and a rather unusual system of webs and cross bracing has been employed. The connecting rods are of nickel steel drop-forgings, and the pistons are of aero metal.

The oiling plan is a most ingenious one, comprising a pressure feed circulating system whereby the oil is delivered by a gear pump to the various main bearings, and a splash system in which the level may be regulated by the operator by means of a slotted tube running the full length of the crankcase.

Circulating water and bilge pumps are of the rotary type, and an air compressor with clutch for disengagement is provided. Ignition is by high tension magneto and also by battery distributor.

These motors are declared capable of developing one horsepower for every seven cubic inches of piston displacement, and also to average one horsepower for every ten pounds engine weight.



The new Harbeck line comprises a 75 h.p. four and a 110 h.p. six with 4½ x 6-inch cylinders, a 275 h.p. six and a 400 h.p. eight with cylinder dimensions of 6¾ x 7¾ inches

Sixty - foot cruiser designed by Swasey, Raymond & Page of Boston, Mass., for I. E. Raymond of Stamford, Conn. This boat was built by the Camden Anchor-Rockland Machine Co.

The New Racing Rules for 1916

Changes Adopted at the Annual Meeting of the American Power Boat Association Which Will Tend to Stimulate Racing and Produce Closer Finishes than in the Past

AT the annual meeting of the American Power Boat Association, which was held recently in New York City, several changes were effected in the racing rules for the coming season which are bound to work out for the best interests of the sport. While there were no radical changes in the method of obtaining the rating of a boat or the horsepower of the motor, yet there were a few details which the experience of the past year showed necessity for correcting.

At the annual meeting of 1914 a new formula was adopted for determining the horsepower of motors in cruisers and open boats. The rule adopted a year ago required that the owner must specify the maximum number of revolutions of which his motor was capable under racing conditions, and that this figure should be used in the determination of the horsepower, which in turn was used in the formula for boat rating. While it was obligatory that the owner must specify his maximum r.p.m., yet he was allowed to exceed his declared maximum r.p.m. up to 10% in a race without any danger of being penalized. This arrangement led many owners to believe that it was perfectly proper to specify only 90% of their maximum r.p.m. and then run their motors at 100% of the maximum r.p.m. in the race itself. Other owners of course did not take this view and consequently declared their actual maximum r.p.m. Naturally, in many cases the honest man was the loser, with the result that he said little or nothing, but gracefully withdrew from racing until such a time as the ambiguity in the existing rule should be changed.

This year the association voted to eliminate the 10% clause from the rules, and require that every owner shall specify not only the maximum revolutions of his motor to be used in the determination of the horsepower, but, furthermore, must honestly run his motor in the race or be disqualified at the discretion of the local race committee.

Another change which should work out for the betterment of the small cruiser is the lowering of the upper rating limit for these types of boats. Heretofore a cruiser was defined as a boat rating not over 12 times the square root of her load waterline length. Theoretically this meant that all cruisers having a speed of less than about 20 miles an hour would fall in the regular cruiser class, while those having a speed in excess of about 20 miles an hour would fall in the express cruiser class. A few cruisers having a speed slightly in excess of these figures were able to juggle their rating a little and get into the regular cruiser class also. This meant that the out and out cruising boat having a speed of 8 to 9 miles an hour must race with other types of cruisers which could be pushed at speeds as high as 20 or 22 miles an hour in some cases. Naturally such a condition was not favorably received, by either the owner of the slow boat or the owner of the very fast cruiser. In one case it meant that even though the time allowance was large enough to give the slow boat a chance to win on corrected time, yet it removed any chance for keen competition. If the time allowance was such as to allow the 22-miler to defeat the 9-mile boat on corrected time, there was little glory in such a victory.

The 1916 rule as adopted by the American Power Boat Association provides that a cruiser must not rate more than 9 times the square root of the load waterline length and cruisers rating more than this amount hereafter fall in the express cruiser class.

In some sections of the country for the past few years it has been the practice of owners to ballast their boats abnormally in some races, in order to obtain a large midship section when being measured, and consequently a low rating. It has even been hinted that in some cases this ballast was thrown overboard soon after the start, and such a thing has been known as using a large amount of ice as ballast, and as this melted, the bilge was pumped out and the boat lightened. Hereafter only ballast permanently stowed will be passed by the measurer, and an abnormal amount of ballast in short inland races will not be permitted.

Dorothea, the speedy 56-footer designed by J. Murray Watts for John R. Fell of Philadelphia, plans of which appeared in the September issue of MoToR BoatinG. This boat is powered with a 75 h.p. Frisbie motor

From MoToR BoatinG Readers

This department of MoToR BoatinG *is maintained for the purpose of giving its readers opportunity to ask questions, reply to other correspondents' communications and submit ideas, suggestions, opinions or experiences which may be of interest and assistance to motor boatmen. There are no rules governing the department other than that postage must be enclosed when an answer by mail is desired, and that the name and address of the writer must be given in each instance. No anonymous contributions will be considered for publication, but initials or a pseudonym will be substituted for the writer's own name if the request be made. The editor does not, of course, hold himself responsible for statements made or opinions expressed by contributors to this department.*

A Propeller for a 40-Footer

To the Editor of MoToR BoatinG:

Could you please tell me what size propeller I should use on my boat which is 40 feet long by 7½ feet wide and draws 34 inches? She is compromise stern and has a good free run. The engine is a 1913 model, 15 h.p., 4-cycle 3-cylinder, 6-inch bore by 6-inch stroke.

I am now swinging a 24-inch diameter 36-inch pitch about 350 r.p.m., and make a little better than 8 miles. The engine is supposed to run 400 to 450 r.p.m., and I don't want it to go over 450 r.p.m. I cannot swing anything larger than 24 inches, and would prefer it a trifle less. Please send me the size wheel needed.

Am a constant reader of MoToR BoatinG and enjoy it very much; in fact, all of us go for it as soon as it arrives, even the baby who will hunt for different parts of boats.

H: C. B., Pointe aux Pins, Mich.

[We would suggest one having three blades 24" in diameter by 30" pitch. This wheel if turned about 450 r.p.m. should give you a speed of about nine miles an hour.]

Putting a Cabin on a 25-Footer

To the Editor of MoToR BoatinG:

I have a number of questions I wish to ask you. I have been a constant reader of MoToR BoatinG for about four years and find it most valuable as a ready reference upon all matters pertaining to boats and their equipment. The questions in their order follow:

First—We have a boat which measures L. O. A. 25 feet, beam (extreme) 7 feet, draft (extreme) 2 feet. This boat was at one time an oyster skiff, has quite hard bilges and "S" section stern to which a skeg has been added. The boat is quite heavily constructed. It is powered with a 6 h.p. old style made and break engine, rated to turn a 20-inch wheel (3 blades) at 400 r.p.m. We have been informed that this boat made 8 miles per hour. We are raising the freeboard, and will build on a glass cabin, and boat will be fitted up inside as a cruiser. From the above description would you say that the additional weight of the cabin will make any difference in her speed? The engine will be put in perfect condition, and as the wheel which she now has is but 18 inches, we may put on a 20-inch wheel, but of this we are not certain. This model of hull is easily driven and to my idea of thinking would easily make 8 miles even with the cabin. What do you think? Kindly express any ideas freely regarding the above points.

Second—I wish to install a complete electric system, lights, storage battery ,etc: I have a Crocker Wheeler ⅛ h.p. D. C. 110-volt motor, which, rewound for a low voltage, would make a good generator. Should I wind this compound in order to obtain the best results? Is it absolutely necessary to have a governor pulley on the generator, or can the output be kept constant by some other means? What would you advise? Can you say that changing a make and break engine to jump spark is beneficial?

T. B. G., Newark, N. J.

[It would be perfectly feasible to equip your 25-foot hull with a glass cabin. We doubt very much whether this additional weight will affect the speed very materially under ordinary conditions. However, in a seaway or against a head wind naturally the boat will be considerably harder to drive than before this superstructure was added.

In regard to the electric light installation, we would recommend that a shunt wound generator be used in preference to a compound wound one. It is not necessary with most generators to use a governor. The motor which drives the generator is run at constant speed a large part of the time, and if care is taken to disconnect the generator before allowing the motor to run idle at high speed, we do not believe you will have any bad results.

We cannot say exactly what benefit a change from make and break to jump spark ignition would be. In some motors the gain is very material, while in other motors, there is absolutely no gain at all.]

Hull Is Wet

To the Editor of MoToR BoatinG:

Being a constant reader of MoToR BoatinG would like your advice on the following:

I have an automobile motor boat 22 feet long, 5½ feet wide and 17 inches draft.

It is equipped with a 2-cylinder 4-cycle opposed motor turning a 15 x 18-inch wheel 900 r.p.m. making about 11 miles an hour. Motor weighs 350 pounds. The bottom is round and the stern is V-shaped both ways. Boat runs very smoothly when not very rough, but when it is rough she splashes quite a lot of water and drives into one wave and out of the other. Is there any way of making her dryer? I also have trouble with pump; as she raises over a wave the pump inlet comes out of the water, causing her to stop pumping and then it doesn't seem to pick up again.

The center of engine is 7½ feet from bow and water inlet 6½ feet from bow and 8 inches from keel.

I am thinking of buying a pump which is supposed to raise water at three feet without priming. Am planning putting inlet about 18 inches back of engine and closer to the keel, running a brass pipe to pump which would make about 2½ feet between pump and inlet; I also would put a check valve near the inlet.

Do you think that this plan would work out well or would you have a better plan?

Would you also advise me if there is any advantage in wiring double ignition.

I am installing a magneto and coil and was thinking of putting two sets of spark plugs, if there is anything gained by it.

W. J. M., Fall River, Mass.

[We are afraid that there is no way to correct this without remodeling the hull, which is, of course, impractical. The fault which you have to find with your hull is present in a large number of hulls of similar size and design, and the fault lies with the original design in general and not with any particular part.

We believe that your plan of installing another pump with the inlet nearer the keel and further aft will work out very well indeed, although we do not believe you will find it necessary to place a check valve close to the inlet. A pump line which is well made up, leaving plenty of red lead at the joints, should be capable of holding water for an indefinite length of time without the use of a check valve close to the inlet.

Double ignition on high speed engines will give at least 10% increase in power, and we believe it should give some increase in your case, although we are not familiar enough with the details of your engine and installation to state definitely what this increase is likely to amount to.]

A Wheel for a 32-Footer

To the Editor of MoToR BoatinG:

As your Trouble Department in MoToR BoatinG is very interesting, I always turn to it first to see what information I can get, because it gives the boys in trouble a chance to air their views and get good practical advice.

I would like to ask the following questions through your columns:

I am building a Niagara Motor Boat Co. knockdown boat for my own use next summer. Boat is express type, motor enclosed forward under hood, open cockpit and auto top. It is 32 feet long, 5 feet 6 inches beam, has good displacement lines and is built with fairly heavy ribs, ⅜-inch x 1-inch centers, and is ⅞-inch white pine planked; rest of construction and finish in oak.

Gasoline capacity, 60 gallons, amidships under seats. The motor, a Ferro 3-cylinder, 5-inch bore, 5-inch stroke, rated 25 h.p., at 800 r.p.m., 2-cycle, 250 pounds. In my old boat, a 28-foot, 4-foot 10-inch beam, I used a 3-blade 19-inch diameter, 32-inch pitch. Now, in this boat would a 3-blade 20-inch diameter, 28-inch pitch give me better results? And what speed could I reasonably expect? Draft of boat will be about 16 inches forward to 1 inch at extreme stern, draft to clear wheel about 23 inches.

Weight of complete outfit, when complete with two men in it, estimated 2600 pounds.

Also will the law go through for registering and numbering motor boats of the pleasure type this coming season? I think it a good thing and will be one of the first to register if it goes through. For the careful man the laws have no terror, but the fellow who goes joy riding, gets filled up on bad whiskey and tries to run you down, does not like it, for he has to use a little common sense or you can get his number.

P. L. K., Detroit, Mich.

[We would suggest a wheel having three blades 20" in diameter by 30" pitch, which should give you a speed of about 16 miles an hour. It may be that your motor will not be able to turn this wheel up quite as fast as you desire, in which case we believe it would be a good plan to saw a small amount off the tip of each blade. In doing this, care should be taken to take the same amount off of each blade, in order not to disturb the balance of the propeller.

In regard to the law for registering boats, we do not believe that the bill will pass Congress for a year at least, but we are of the same opinion as you, that it would be a mighty good thing for the careful man who always obeys the laws and respects the rights of others.]

Runaway, a 30 x 7-foot cruiser which shows better than 20 miles per hour with a four-cylinder Wisconsin motor

Season's Racing Records Questioned

To the Editor of MoToR BoatinG:

Will you please explain the contradictory statements in current issue of MoToR Boating: "Miss Detroit has shown fastest racing speed of 1915," "Tech, Jr., made a world's record in mile trial of 53.7 miles per hour," "Hawk Eye averaged 56 and 57 miles per hour over accurately measured courses."

I naturally supposed these records were over official courses, and officially timed, and if this be true then please explain the apparent discrepancy in the above statements.

Please give me the time of the fastest mile ever covered by a hydroplane under official times, and name of boat.

I don't care anything about average or endurance runs, but I simply want to know what boat has covered a straightaway mile, officially measured and timed, in the least time.

A. D. E., Cedar Point, N. C.

[It will be necessary for you to define official conditions before we can give you this. You state you wish the fastest time made in the straightaway, but do not care anything about the average speed. This, in our mind, means absolutely nothing, as a boat might go down stream, being favored by a six-knot current, and thus establish what you call a world's record, yet she would not be the fastest boat afloat by a great deal. For this reason we have always given average results in MoToR BoatinG.

For example, the speed of 53.7 miles an hour, given for Tech, Jr., was the average of six runs, three made in each direction to counteract any effect of tidal current or favorable winds. In the same way, the speed made by Miss Detroit at the time of going to press with our September issue was the fastest speed of 1915 made in competition. The boats run alone in mile trials and as the course is straightaway without any turns, as in a competitive race there are, the average speed will be greater in the short straightaway dash.

It is true that Hawk Eye has averaged between 56 and 57 miles an hour on accurately measured courses, but this has not been done in competition nor in any regularly organized race meet. It was simply time made in a tryout of this boat by her owners, and, naturally, it cannot be accepted as official.

In the 30-mile race held on Lake Michigan, September 9th, 1915, Disturber IV made the course at the rate of 54.326 miles an hour. In the one-half mile dash, held on the inner harbor at Chicago, this same boat averaged 60.77 miles an hour as an average for six runs with and against the wind. Her best single half-mile run was at the rate of 61.503 miles an hour.]

Motor boating on a windjammer. When the skipper wishes to make more speed he simply starts the little single lunger in the dink and allows the outfit to push, which it does at a surprisingly lively gait

Running with 11% Slip

To the Editor of MoToR BoatinG:

I have an open motor launch 39 feet x 5 feet x 9 inches, built of ½-inch cedar, oak ribs. It is a displacement model and from amidships aft is practically flat with no deadwood or skeg. Hull weighs 1200 pounds, according to builders' figures. The engine is a 6-cylinder 2-cycle Stuart, 5½ inches x 6 inches, and will not run over 750 r.p.m. with three-bladed wheel, 24 x 30 inches. Engine weighs 1500 pounds; outfit ready to run except crew, about 3000 pounds. As near as I can figure out I am getting 19 miles an hour. Have I got right wheel? What speed would I get out of same hull with a 6-cylinder 4-cycle Winton auto engine, which will weigh about 1000 pounds; what wheel for Winton engine? I also have a hull 25 feet x 4 feet x 8 inches. What speed would I get with Winton engine in this hull? What propeller is most suitable? I want to get 25 miles out of either hull if possible. Both hulls are fine models and built for speed.

P. C., Boston, Mass.

[We are under the impression that you have made some mistake in the data you have given us, for with the propeller you are using, turning at 750 r.p.m., giving you a speed of 19 miles per hour, your outfit shows only a slip of 11%. While efficiency as good as this may be possible, yet it is considerably better than anything we have ever heard of with an outfit of this kind. We would not expect a boat built along the lines of yours would run with much less than 20% slip under ordinary conditions.

If your motor is in good condition it should be developing 80 h.p. at very nearly 750 r.p.m. and in a 39-foot hull, the total weight of which is not more than 3,300 pounds with crew on board you should obtain 24 miles per hour. The proper propeller seems to be one of either 21" or 22" in diameter by 40" pitch having three elliptical shaped blades, the greatest width of which should be 7".

If you will advise us more definitely regarding the power, etc., of the Winton motor, we may be able to help you.

Motor for a Heavy Cruiser

To the Editor of MoToR BoatinG:

Although not a subscriber I am a regular purchaser and reader of your very comprehensive and valuable magazine. Therefore, I take the liberty to ask for the following information, it being my understanding that you conduct a department which gives advice to your public when it is desired.

I am the owner of a raised-deck cruiser, 38 feet 6 inches water line; 42 feet over all; 13 feet beam; 2 feet 6 inches draft; 6 feet 8 inches freeboard at bow. The planking is 1½-inch cedar; frames, 4x4-inch oak spaced 12 inches.

I wish to install an engine but do not want speed, and 7 to 9 miles an hour will suffice. I wish the boat to have sufficient power to handle readily under adverse conditions of wind and sea. I shall handle the boat myself and am inexperienced. Therefore simplicity and reliability are the most essential elements of my power plant. What character of power plant do you advise my having installed, mentioning especially the following points: Number of cylinders, bore and stroke, horsepower, duty (heavy or medium), revolutions, size and pitch of propeller and number of blades? Advice on any points which you know to be essential will be greatly appreciated.

Have you on your staff, or do you know of, a man whom you can recommend to give honest advice as to the plant best suited to her after inspecting the boat? By this I mean a man who has not got an engine to sell.

A. M. W., Brooklyn, N. Y.

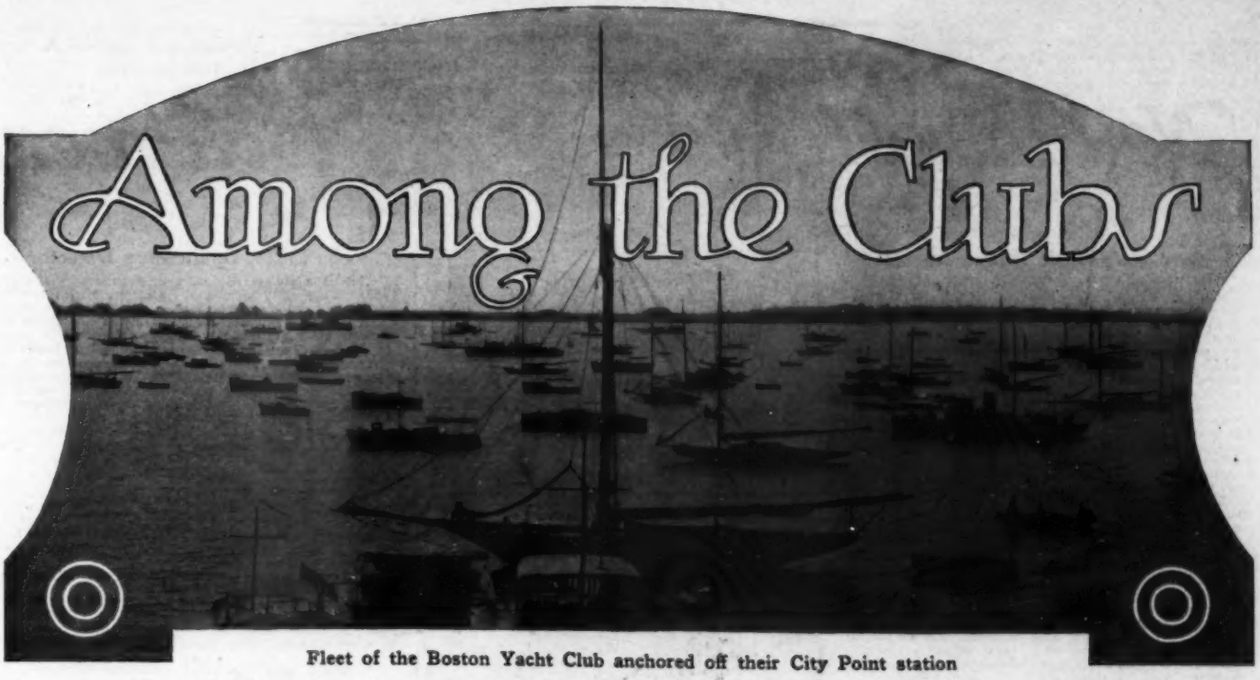
[We note that your boat is especially large proportioned and heavily constructed. To give you a speed of 7 miles an hour with this craft you will need in the vicinity of 15 h.p., and to obtain 9 miles an hour you will need at least 25 h.p. You should choose a motor of the heavy-duty type developing its power at not over 500 r. p. m. It should weigh not less than 60 pounds per horsepower and preferably a little more.

We cannot advise you as to bore or stroke, as those particulars are unimportant, provided you get the necessary horsepower in a heavy-duty motor. It is also impossible to advise you as to the size and pitch of propeller unless we have more definite information as to the particular make of motor which you choose, its power and the number of revolutions at which you are to run it. If you will advise us on these points, we shall be pleased to give you such further information as we are able to.

Unfortunately, it is not our policy to advise or recommend any particular make of motor, but we believe that if you will refer to any of the naval architects who advertise in MoToR BoatinG, they can furnish you with an engineer who will inspect your boat and give you advice on any motor you have in mind.]

Muir Maid, owned by P. A. Proal of Red Bank, which is powered with an eight-cylinder 150 h.p. Sterling motor that drives this 40 x 9-foot cruiser 22 miles per hour

Among the Clubs



Fleet of the Boston Yacht Club anchored off their City Point station

Baltimore Clubs Getting Busy

The boat clubs of Baltimore have come out victorious in the long fought suit between the Park Board and the Board of Estimates and unless the Park Board decides to take its case to a higher court, it is almost certain that the much talked of removal of the boat clubs to Fort McHenry will take place some time in the near future.

When the idea of renting part of the historic park to the yacht clubs of Baltimore was advanced by the mayor and the Board of Estimates, it was also decided that $25,000 be appropriated to remove the clubs to the new site and for the purpose of building adequate additions. It was also planned to move what was known as the Canteen Building to the new site to be used as a boat-house for one of the clubs. The Park Board, which wanted to use the Canteen Building for a public dancing pavilion, took the stand that no public funds or building could be used for the furtherance of private enterprises and obtained an injunction preventing the Board of Estimates from moving the building. The courts of Baltimore held that the Park Board had no right as a body to institute suits against another department of the city and dissolved the injunction.

This will mean that the Park Board has nothing to do with the removal of the boat clubs to Fort McHenry and it is probable that the work of putting the clubhouses on floats and transporting them to the fort will be begun soon. The city contemplates the erection of a fine breakwater at the fort, and if this is carried out the Baltimore clubs will have one of the finest anchorages on the Bay. It is believed that the interest awakened in water sports by the club's new location will stimulate enthusiasm for yachting there as nothing before has ever done, and Baltimore lovers of aquatic sports are looking forward to the establishment of a highwater mark next summer in the history of the game.

The thirteenth annual meeting of the Chesapeake Bay Yacht Club was held at Easton, December 8, when the following officers were elected for the season of 1916: Commodore, Colonel F. Carroll Goldsborough; Vice-Commodore, S. S. Schuyler; Rear Commodore, William J. Starr; Treasurer, Alfred Lee Tharp; Secretary, J. Graham Johnson; Board of Directors, M. T. Goldsborough, Dr. Hugiett Hardcastle, Colonel Oswald Tilghman and Dr. Charles R. Enos; Regatta Committee, H. H. Pearson, Jr., Andrew A. Hathaway and Edward H. Buck.

Next year's regatta of the club, one of the big features of the season, will probably be held on Eastern Bay, at the mouth of the Miles River. The club sanctioned the plan of making large improvement in the building, and the drawings have already been made.

Mayor Preston, of Baltimore, has proposed a plan to put motor boats on Druid Lake, at the Madison Avenue entrance to Druid Hill Park, for the use of the public at a nominal charge. The lake will be abandoned within a month by the water board. Druid Lake is more than a mile long in circumference, and the drive around is the most popular in the city. The mayor is not going to use this as a revenue producer and the charge to be made is only to keep the boats running and in repair.

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A. P. B. A. Committees

The following committees have been appointed by the Council of the American Power Boat Association: Racing Commission, E. Claude Headley, Chairman; C. F. Chapman, Secretary; Frank M. Garden. Advisory Technical Committee, Reuben B. Clark, Chairman; Henry J. Gielow; John J. Amory. Central Committee on Buoys and Other Aids to Navigation, Harry A. Jackson, Jr., Chairman; Joseph H. Wallace, A. B. Cartledge, Charles P. Tower, George S. Le Sauvage. Standardization Committee, George F. Crouch, Frederic K. Lord, Herbert L. Stone. Legislative Committee, A. L. Judson, Chairman; Harry S. Mesirov, Dr. A. B. Bennett, Jr., Mathew McCarty, I. H. Cory.

* * *

The Florida Midwinter Regatta

The dates of February 19, 21 and 22 have been chosen for the second annual Florida midwinter regatta, to be held at Miami on Biscayne Bay. At this time the southern season is at its height. Coming as it does about two weeks after the close of the New York Motor Boat Show, it is expected that many racing enthusiasts will go direct to this regatta. It is probable that several of the boats expected at Grand Central Palace this year will be shipped to Florida to take part in these races, and special transportation facilities have been arranged to handle craft which are to be shipped south at this time.

While only the tentative arrangements have been outlined, without doubt classes for all types of craft will be arranged, including displacement racers, hydroplanes, cruisers and express cruisers. The American Power Boat Association rules will largely govern, amplified somewhat to meet local requirements. The race course at Miami is one of the best courses in the country, as it is laid out in the dredged portion of Biscayne Bay, and is perfectly protected from unfavorable weather conditions.

Carl G. Fisher, of Indianapolis, is in charge of the arrangements, and the management is considering a proposition to pay at least part of the transportation expenses of the boats shipped to Florida. The prizes will consist of handsome trophies, and already it has been announced that several boats are building which will be tried out for the first time in these races.

* * *

Maumee River Y. C. Overrules Its Commodore

The decision of Percy C. Jones, of the Maumee River Yacht Club, not to be a candidate for re-election and to refuse the nomination if tendered to him, came to naught at the annual meeting of his club held recently in Toledo. The club decided unanimously that the commodore must remain at the helm for another year, and in spite of his objections, he was forced to sign on. We know of some clubs which are dead ones, but not so with the Maumee River Yacht Club, especially when it comes to a question of the annual election in keeping in office a man who has done so much for his club and for the sport of motor boating in general. Commodore Jones will have L. A. Alexander as his vice-commodore, which will make as strong a team of officers as any club in the country can boast of.

The Christmas Party, which has been made famous by the Maumee River Yacht Club, was held this year on December 13, and every poor youngster south of Swan Creek was invited, irrespective of his creed or color. The annual venison dinner was held on December 18, and now the members are enthusiastically looking forward to colder weather, when they can launch their ice boats, which are now all rigged and waiting.

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New Rochelle Yacht Club Nominations

The following nominations for officers of the New Rochelle Yacht Club have been announced by the Nominating Committee: Commodore Augustus P. Bennett; Vice-Commodore, William R. Laidlaw; Rear Commodore, Theodore C. Marceau; Secretary, C. A. Marsland; Treasurer, Henry M. Lloyd; Trustees, W. P. Jeffery, Harold Birnie, H. M. Betts; Regatta Committee, G. C. Molloy, H. W. Patterson, D. E. Dealey; Art Committee, Harry A. Bliven, Henry Doscher; Law Committee, John F. Lambden, Robert Ten Eyck; Entertainment Committee, Lucius W. Hitchcock, Marc M. Reynolds; Nominating Committee, B. R. Stoddard, C. A. McGill, A. H. Titus; Measurer, Roger M. Haddock.

* * *

Interlake Yachtsmen Get Together

The annual yachtsmen's dinner of the Inter-Lake Yachting Association was held at the Hotel Tuller, Detroit, on Saturday evening, December 4, at 6 bells. Yachtsmen from all lake ports were present. Plans for the coming season's activities were discussed, and a most enjoyable evening spent by every yachtsman present. The navigation and pilotage instructions sent out specified that every motor boatman should carry a spare oar and 60 pound hook for possible heavy weather, his megaphone for talking from yacht to yacht at the anchorage and for squadron singing, and not to forget his appetite and best disposition. Evidently the instructions were followed to the letter, as every pilot was able to follow the course without grounding. The crew in charge consisted of Frank Frey, Fleet Admiral; A. M. Gibson and T. Owen, Pursers; C. McFedries and B. Himmelein, Pilots. Of course Commodore Harry C. Kendall, of the Interlake Yachting Association, and Commodore George R. Marsh, of the Detroit River Yachting Association, were at the helm as usual.

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Final Regatta at Saint Louis

The river carnival scheduled as a final event for Veiled Prophets Week, which had to be postponed on account of the 70-mile gale which blew up the river on that day, was held recently and proved very successful in spite of the late date.

The big event of the day was the free-for-all, which was won by Mark Twain, a 20-foot single step hydroplane, powered with an 8-cylinder Sterling motor, and built by the St. Louis Yacht and Boat Company. Sea Rover, a 31-foot V-bottom runabout, also built by the St. Louis Yacht and Boat Company, and powered with a 4-cylinder Van Blerck motor, won the runabout race. The express cruiser race, planned as a handicap affair, had to be canceled on account of the lack of facilities for proper handicapping the various types and sizes of cruisers entered. However, Pegasus which won the western cruiser championship at the Hannibal Regatta of the Mississippi Valley Power Boat Association went around the course for the benefit of the 50,000 spectators and thoroughly demonstrated to them the practicability of this type of boat for high speed express cruiser service.

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Annual Election at the Sheepshead Bay Yacht Club

At the annual election of the Sheepshead Bay Yacht Club, New York City, the following officers were elected: Commodore, J. E. Schiffmacher, Vice-Commodore, A. A. Scharbius; Rear Commodore, H. B. Werner; Secretary, J. B. Adams; Treasurer, L. W. Seligsberg.

This yacht club possesses one of the finest harbors on the Atlantic coast, and its nearness to all kinds of stores where supplies may be obtained makes it an ideal club for the enthusiastic city yachtsman.

* * *

Chicago Club Active

The South Shore Power Boat Club, Chicago, Ill., is in the midst of a very active winter season. The annual meeting was recently held at the winter quarters of this club, and the new officers elected have given their word to make the coming season the most active and prosperous in the history of the South Shore Power Boat Club. Plans are already under way for the allotment of moorings in the club's harbor at Jackson Park.

* * *

Stuyvesant Yacht Club Lays Cornerstone

The laying of the corner stone of the new club house of the Stuyvesant Yacht Club, Pelham Bay Park, New York City, took place recently with imposing ceremonies, in which all members of the club participated. Copies of past records of the club, a complete list of the officers and members, etc., were placed in a sealed box under the cornerstone.

* * *

New York Motor Boat Club Election

As a result of a spirited campaign lasting two months, an entirely new set of officers was elected at the annual meeting of the New York Motor Boat Club, whose quarters are at 147th Street and Riverside Drive, New York City. H. C. Vaughan was elected Commodore; R. C. Appleby, Vice-Commodore; R. L. Kingston, Rear Commodore; W. H. Latimer, Treasurer, and A. M. Coyle, Jr., Secretary. None of the above persons have ever served as officers of this club, but are all motor boatmen of many years standing, who are well conversant with the affairs of the club, and no doubt will manage the affairs fully as successfully as the past administration, which has held office for three years. The flag officers, together with the secretary and treasurer and two members elected by the club, constitute the Board of Governors of the New York Motor Boat Club. C. Ludwig was elected a member of the Board of Governors for one year, and C. F. Chapman a member for 1916 and 1917.

New Things for MOTOR Boatmen

Sprague Electric Dynamometer

The Sprague Electric Works of General Electric Company, New York City, is offering its Sprague electric dynamometer for the measurement of horsepower of gasoline engines. By means of this device engine manufacturers can measure actual values of torque and speed at any and all loads and speeds within the range of the engine under test. This dynamometer is built in all sizes from 1 to 200 h.p. for marine engine test and for both high and low speeds. Not only marine engines but carbureters and magnetos may be tested by this device, and for these purposes it is declared to be ideal, as it gives steady operation at high, medium and low speeds, and full braking effort at low as well as at high speeds. The easy and convenient control of load and speed is another very important advantage.

The torque exerted by the engine in test is measured by means of a beam scale in combination with a spring balance of the dial type, while measurements of speed are made by means of an accurate electric tachometer.

With the Sprague electric dynamometer no corrections or calculations are required for the measurement of horsepower, as the torque readings are made directly in pounds and the speeds in r.p.m., from which readings the horsepower is determined at once from a straight line chart. This machine returns useful electric power to the shop, and other advantages claimed for it are its convenience of operation, its accuracy and its simplicity.

Furnished with this dynamometer is a gasoline metering device especially designed to secure accurate measurements of fuel consumption per horsepower hour. A further valuable adjunct to the dynamometer is an electrically operated speed counter, controlled by push button.

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K-W Model K Coil

The K-W Ignition Co., of East 30th St. and Chester ave., Cleveland, O., is putting out its new Model K coil to sell at a list price of $4. This coil is declared to be of the highest type of construction and to have a fast vibrator and properly proportioned winding for throwing a hot, fat, caterpillar spark that shoots the mixture instantly with small battery consumption. It is declared that this coil will work with batteries or any of the direct-current generators, but it is not intended to operate with K-W alternating current low tension magnetos. Extra springs and contact points are $1 per pair.

• • •

"The Log of the Snark"

When Jack London encircled the globe in his world-famous yawl Snark, he was not the only writer aboard ship. His wife, Chairman Kitredge London, has just brought out through the Macmillan Co., of New York, an interesting volume which gives her experiences and impressions. As may be inferred from the title, this book is written in log form and what with the readings for latitude and longitude given at the head of each entry, has a truly nautical flavor. Snark was powered with a gasoline motor and for this reason Mrs. London's book should have an added interest for readers of MoToR BoatinG.

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Knox Model D Carbureter

In presenting its new Model D carbureter to the trade, the Camden Anchor-Rockland Machine Co., of Camden, Me., is offering an instrument which, it is declared, will deliver a perfectly mixed vapor of the highest explosive consistency on distillate, alcohol, gasoline or kerosene. The carbureter is designed with a super-heating chamber and is installed without making any changes in the construction of a motor. It is made in three sizes suitable for motors having bores ranging from 3 to 7 inches and may be used on either two or four cycle engines. The Model D is fitted with a sight feed fuel glass showing the location of the fuel at all times. This carbureter is operated by two levers, one of which controls the mixture of warm and cold air with the gasoline—the other operating the throttle valve and automatically giving the motor the proper mixture for any speed.

• • •

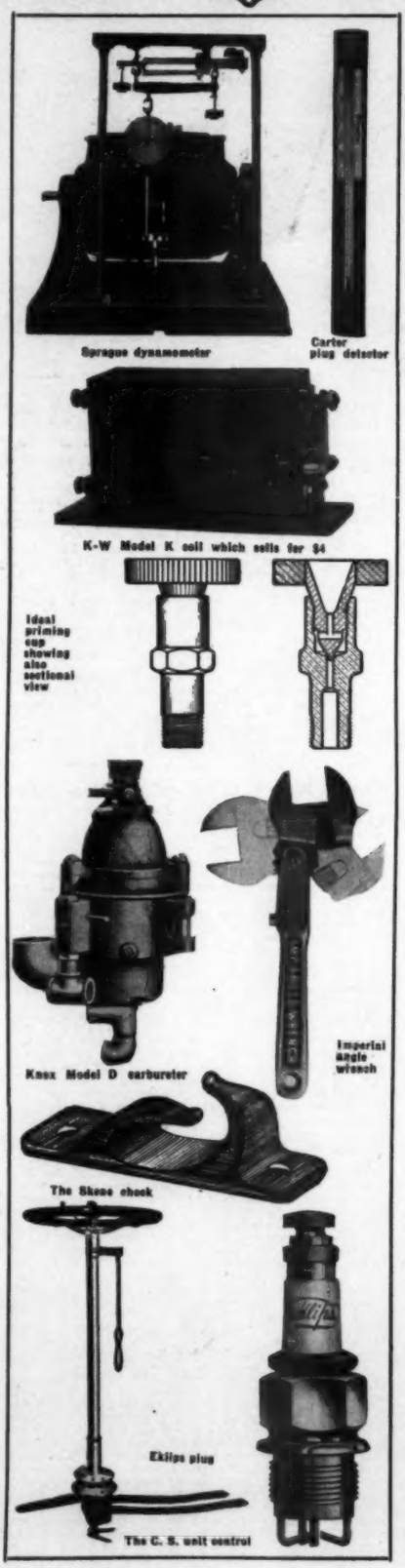
The Skene Chock

This popular well-known article of marine hardware has recently achieved new prominence through having been added to the line of Wilcox, Crittenden & Co., of Middletown, Conn. The chock is similar to the ordinary chocks, but is designed especially to prevent the cable from jumping out when in use. This feature is most valuable when riding to anchor in a choppy sea, or when towing a tender if the chock is in use at the stern of the boat. The cable may be easily removed from the chock at the will of the boatman. The Skene is cast in one piece with no hinge or pins to break or lose overboard, and is made in brass or galvanized iron.

• • •

C-S Unit Control

One of the accompanying cuts shows the new C-S Unit Control, recently produced by the W. S. Hall Co., of Rochester, N. Y. This gear is particularly adapted to the one-man cruiser, being produced to meet the demand for a gear that centralizes the entire control of the boat. The wheel is of the chain and sprocket type with a hand lever for operating the reverse gear. It is also equipped with electric signal or starting button. This gear places at the pilot's finger tips the steering, reversing, spark, throttle and electric signal or starting control.


Sprague dynamometer
Carter plug detector
K-W Model K coil which sells for $4
Ideal priming cup showing also sectional view
Knox Model D carburetor
Imperial angle wrench
The Skene chock
Eklips plug
The C. S. unit control

The Carter Spark Plug Detector

This is a simple device, manufactured by Carter's Spark Plug Detector Co., of Detroit, Mich., for the purpose of detecting which plug in a motor is missing. This is done by measuring the temperature inside the various cylinders through their respective spark plugs. It is not necessary to remove the plug from the motor, however, as the detector is intended to be placed against the metal bushing of the porcelain. The test may be made while the motor is running or within ten minutes after it is shut off. The cost is $1.50.

• • •

Ideal Priming Cup

The Ideal Brass Works, of 10th Street and Canal, Indianapolis, Ind., is bringing out a new compression needle valve priming cup which is a radical departure from the old style cups, and which is declared to have many advantages. It is guaranteed not to leak under the highest compression and it can be operated with the thumb and forefinger without the use of tools and without burning the fingers. The fiber disc is so attached that it will not work loose. The cup shown in the accompanying illustration, known as No. 34, is listed at fifty cents in the nickel finish, and forty cents in brass. This type is also furnished in a suitable angle for use on V-type motors.

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Imperial Angle Wrench

The Imperial Tool Co., of Bloomington, Ill., has recently brought out an adjustable-handle angle wrench, which is declared to incorporate a number of advantageous features. The adjustable jaw will take any tap up to 1¼ inches at eight different angles, and the tap can be turned in very close quarters by ratcheting the handle one or more notches at a time in either direction, by simply pressing the ratchet button. When the button is released the handle is locked immediately. This wrench will take the place of many different sizes and types of wrenches, and is declared to be easily operated in positions where no other wrench can be used. It is constructed of the very best material for withstanding the hardest kind of use.

• • •

Eklips Spark Plug

This plug is one which the Fulton Co., of 726 National Ave., Milwaukee, Wis., has recently placed on the market. The internal construction of this plug is such that the explosion tends to blow all soot and carbon out of it, and keep it clean at all times. The manufacturer announces that only the best materials are used in the plug, and that it is a high grade article throughout. The porcelain is of imported stock and is hand turned, and the electrodes are composed of a patented metal that is guaranteed not to fuse, flake, nor corrode.

• • •

Becco Oil Can Holder

The Michigan Motor Specialties Co., of Detroit, Mich., is putting out a new Becco oil can holder, which is designed to prevent the spilling of oil or the rattling of the can, while it keeps the utensil in the place where it is wanted. These holders are made of steel stampings, finished in black enamel. The spring is made of music wire, nickel plated. In construction the holder has two members riveted together at the rear end. Near the forward part the spring is fastened, and this draws the two members together so that if the can is drawn forward, the two fingers on the forward part of the holder release the can. In replacing the can, it is simply forced against the two fingers or clips, which separate and permit it to pass into the holder. The price of the holder is twenty-five cents.

• • •

Firefly Light

George K. Burleigh, of Penacook, N. H., manufactures the Firefly light, which consists of a dry battery and three incandescent lights with mirror reflection. The handle projects from a fibrous disc with a switch by which one light may be flashed separately or all together, getting three times the light as if one were used. The uses of the light are manifold, as it may be used as an emergency lamp in the home or a trouble lamp for motor boat use. It may be depended from the neck by the strap, leaving the hands free to work. The price of the light with three incandescent lamps is $2.50, with two, $2, and with one, $1.25.

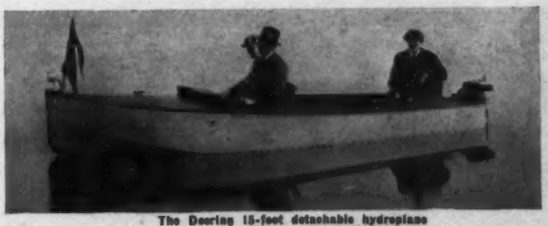
• • •

Airspring Grease Cups

The Hunter Pressed Steel Co., of Philadelphia, Pa., puts out the Airspring automatic grease cup, which is described as follows: The top is screwed part way into the body. The disc is pressed down upon the grease by compressed air in the top, assisted by a light spring, which also acts initially in leveling the grease. The disc and spring structure are easily removable for cleaning. Everything is positive and automatic in action and absolutely reliable. The cups are made from pressed steel and the entire device is stated to be fool-proof. Airspring grease cups are claimed to be well adapted to all rapidly moving or rotating parts and consequently are excellent for loose pulleys. The cups sell at prices ranging from $1 to $3, according to size and material, which may be plain, polished, brass or copper plated.

Deering Detachable Hydroplane

The Deering Boat Mfg. Co., of Madison, Wis., has just brought out a seven-passenger hydroplane for use with a detachable motor. This is a 15-foot boat with a 4-foot forward deck, which protects the passengers from a rough sea and also provides room for stowage. This boat is built along the lines of some of the fastest hydroplanes and is designed to give the minimum amount of resistance, having a tendency to rise slightly out of the water on an even keel when in motion. The equipment of the boat is complete and the decks, interior, seats and coaming are finished in imitation mahogany.



The Deering 15-foot detachable hydroplane

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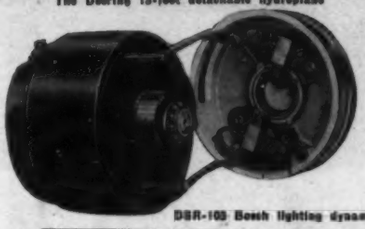
Bosch Standard Lighting System

The Bosch Magneto Co., of New York City, has just introduced the Bosch Standard lighting system, which is an efficient, high-class product designed to meet all lighting needs on the modern motor boat. It consists essentially of but four units—namely, a dynamo, a storage battery, a control box and a switch. The dynamo is supplied in two sizes, the larger of which is rated at 100 watts and the smaller at 80 watts. Aside from the difference in size, however, the types are practically identical, and both are intended to operate in connection with a 12-volt storage battery. The control box is intended for mounting in any place convenient for inspection by the operator. Incorporated in the control box are the automatic cut-out, the resistance coil, the main fuse and the field fuse. Two styles of switch are provided for use with this lighting system, one of which combines switch and ammeter in one unit. Both switches are provided with a locking arrangement similar to that employed on Bosch dual and duplex coils, and both of them may be locked and the key removed in any of the four switch positions.



DSR-103 Bosch lighting dynamo

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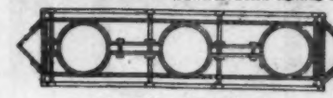
The Comer Life-Saving Raft

Samuel A. Comer, of Sherman, Tex., has invented a life-saving raft which is declared to have several advantages over the conventional type consisting of two or more hollow, airtight cylinders spaced some distance apart by a framework which maintains them in a plane side by side. It is the object of the new invention to utilize this space between the cylinders for other airtight compartments, thus attaining the maximum buoyancy of a raft with minimum weight and size of the structure. This is done by providing top and bottom covers of sheet metal, which extend over all the cylinders and are closed at the ends by other sheets of metal. Thus, the spaces around the cylinders are made airtight, while still other floats which are triangular in cross section, extend all around the raft and give additional buoyancy. One great advantage claimed for this raft is that its construction is such that any cylinder may be removed for examination or painting without disturbing the other cylinders.



Cross section, Comer life raft

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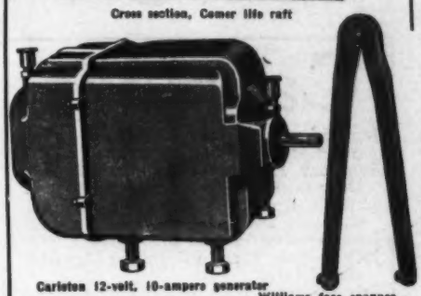
New Carleton Generator

The Carleton Co., of 170 Summer street, Boston, Mass., is putting out a special 12-volt 10-ampere generator which is particularly applicable to marine use, because of its high charging rate. This generator is fitted with ball bearings and is designed to operate at a speed of 1,800 r.p.m. It is 10 inches long by 7 inches high and 5 inches wide, and, enclosed in an aluminum case, weighs 25 pounds. It is declared to be suitable for use with 6 or 12-volt systems, and will furnish current for charging a storage battery and lighting the boat.



Carleton 12-volt, 10-ampere generator

Williams face spanner

* * *

Dandy Reverse Gear

This gear, which is manufactured by the Brown Clutch Co., of Sandusky, O., is the outcome of several years of experience in building gears. It is being offered now to the public for the first time, but it has been put through some very severe tests during the last two seasons. The working parts run in a bath of oil, the case being so constructed that it is almost impossible for the oil to leak out. The clutch is of the multiple disc type, which gives the engine a chance to start the load easily without jar or vibration. The reverse is one-third of the go-ahead. It is declared that only the best material and workmanship go into the construction of this gear, which is guaranteed by the maker to hold the power at which it is rated.

* * *

Williams Adjustable Face Spanner

This tool, which has been found valuable in motor boat use for the manipulation of nuts flush with the deck and having grooves, is manufactured by J. H. Williams & Co., of Brooklyn, N. Y. As it is adjustable, it is desirable for service where center-to-center dimensions vary. It is made in three sizes, having an extreme capacity of 2, 3 and 4 inches respectively, and is sold unfinished for 60 cents, 90 cents and $1.30. It is also provided semi-finished at proportionately higher prices. The material used in its construction is a strong, tough grade of steel, drop forged.

* * *

The Caille Electric Horn

The Caille Perfection Motor Co., of 100 Baltimore avenue, W., Detroit, Mich., is putting out an electric vibrator horn which is sold for $3.95. This horn is declared to have a note that is pleasing and mellow, due to the proper proportioning of its parts and its simple and sound construction. The Caille Electric Special is finished in black and nickel and is provided with push button, ten feet of cable and bracket for mounting.

Caille Electric Special horn

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Bull Dog Gears

The Kennedy Machine Co., of 45 Fort street E., Detroit, Mich., has just announced its 1916 model Bull Dog reverse gear, which is built on the spur gear multiple disc type. The Bull Dog is an enclosed gear with the upper and lower halves of the case divided at the propeller shaft center. The faces are ground, finished and grooved for a wick packing to ensure a tight joint. In the rear bearing there is an oil drain which returns the oil into the case. On the forward drive the clutch is of the multiple disc type with hardened steel discs ground to a smooth finish; the reverse clutch is a self-centering bronze ring, and a flange on the gear case. The expanding fingers used in the Bull Dog are drop forgings designed to give the utmost possible rigidity, and the cone is made of machinery steel, carbonized and hardened so that it cannot be cut or gouged, and will give equal spread to the clutch fingers. Plain spur stub-tooth gears are used. The main bearings are babbitted with first quality bearing metal and all other bearings are fitted with heavy brass bushings.

Watkins air-propeller outfit

The Dunn Divinhood in use under water

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The Dunn Divinhood

This device, manufactured by the Miller Dunn Co., of Miami, Fla., and sold in the North by Chas. D. Durkee & Co., of 2 South street, New York City, consists of a metal helmet, which sets on one's shoulders and is kept from floating off by metal weights in front and back. Windows are provided for the eyes and the operator is kept supplied with air by a length of protected hose leading from a pump at the surface of the water. This outfit is intended for emergency work in connection with a motor boat in clearing fouled propellers, making temporary repairs to damaged planking beneath the surface of the water, recovering lost articles, etc., etc. It is declared that the Divinhood is absolutely safe, and in fact, safer than a regular diving suit, as should there be any stoppage of air, the diver may throw off the helmet, which is not fastened to him in any way, and rise to the surface by the buoyancy of his own body. It is further stated that it is impossible for water to enter the Divinhood, as the air that is pumped from above effectively displaces it. Surplus air escapes through small holes in the lower edge of the helmet or around the shoulders, so that it is not possible to pump too much. This outfit, complete with pump, hood and 50 feet of hose, is sold packed in a chest for $75.

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Air-Propelled Boats

The Watkins Motor Co., of 524 Bay Miller street, Cincinnati, O., is putting out a 6 h.p. air propeller outfit all ready to set in a boat and operate. This outfit consists of a Watkins motor set in a frame of steel tubing. The propeller shaft runs through a steel tube provided with roller bearings and with ball bearings to take care of the end thrust. The propeller is driven by a belt off the engine flywheel, and the drive arrangement includes a belt tightener by means of which the propeller may be made to operate at full speed and intermediate speeds, or to stop instantly. This outfit may be installed in a canoe or other small boat and will drive it through shallow and grass-filled waters. In addition to the 6 h.p. size shown in the accompanying illustration, 3 h.p. and 12 h.p. outfits are offered.

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Kaufman's Search and Spotlight

This light, which is manufactured by the Kaufman Williams Lamp Co., of Santa Ana, Cal., is mounted on a universal bracket especially designed for deck installation on motor boats. The universal racket permits the light to be turned in any direction for making landings or spotting an object in the water, and the lamp can also be taken from the socket and used as a trouble light. It is constructed in a workmanlike manner, entirely of brass with nickel finish, and the reflector is plated with pure silver, hand-finished. The diameter of the reflector is six inches. This light, which may be run from a storage battery or generator, is sold complete for $7.50, transportation charges prepaid.

The Kaufman adjustable searchlight

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"Isles of Spice and Palm"

This attractive volume by A. Hyatt Verrill, which is published by D. Appleton & Co., of New York, is an authoritative book dealing with the Lesser Antilles. While it is not intended for a guide book, it contains all the information which a visitor to any of the islands in this section of the West Indies might desire. Each island, from St. Thomas to Trinidad, is described fully and sympathetically and there are also chapters on Demerara and Paramaribo. Not only are the various islands described, but the people, customs and objects of interest are treated in detail, while an appendix gives a list of travel routes, hotels, etc.

* * *

Multiple Primer

The Lunkenheimer Co., of Cincinnati, O., is putting out a device, which, controlled from the bulkhead, within easy reach of the driver, is designed effectively and simultaneously to prime all cylinders of the motor. The device has a cylinder five-eighths of an inch in diameter by two and three-eighths inches in length, from which the priming agent is distributed to all cylinders at once. The operation is stated to be extremely simple and convenient. The material used is described as high-grade bronze, and all necessary connections are furnished, enabling the installation to be made in a few minutes.

* * *

Gwilliam Bearings

The Gwilliam Co., of New York City, puts out an extensive line of annular ball bearings, ball thrust bearings, ball thrust step bearings, journal roller bearings, pressed steel bearings, roller thrust bearings, taper roller bearings, radax bearings and thrust bearing retainers. Brass, bronze and steel balls are also in this company's line. These various products may be had in sizes and materials to suit any class of service.

* * *

The Russell Gasoline Saver

The Russell Electric Co., of Danbury, Conn., is offering the Russell gasoline saver, which is an automatic valve, fitted into the intake manifold between the carbureter and the motor. It is designed to admit air into the mixture at the right time and in proper amounts, to produce a more combustible vapor than it is possible for the carbureter alone to deliver. The saver is installed after drilling a one-eighth inch hole in the intake manifold, at a point where the air admitted by the gas saver can get to all the cylinders equally. In the case of a Y or T shaped manifold, the correct point is the junction of the two arms.

Submarine destroyers at the works of the Greenport Basin and Construction Co.

Yard & Shop

The Sterling Line for 1916

With the placing on the market of the new Model F, the Sterling Engine Co., of Buffalo, N. Y., has produced a marine motor which is considered by many to be well in advance of its time. As described on another page of this issue the Model F which is now produced in eight cylinders and will shortly be turned out in four and six-cylinder sizes is a high-speed motor with overhead valves, and with all moving parts, including the flywheel, enclosed. Many of the eights have been put on the testing blocks for ten-hour stretches at top speed and under full load, and not once in these tests has a bearing burned out, a careful inspection after disassembly showing, it is said, a generally flawless condition. Bearing trouble, the curse of high-speed engines, has, according to the manufacturers, been practically eliminated by the use of unusually generous main and connecting rod bearing surfaces and the introduction of a highly efficient lubricating system.

To facilitate the manufacture of its product, particularly the Model F, the Sterling company has just completed the addition to its already extensive plant of a two-story edifice, having an aggregate floor space of 10,000 feet. In spite of the demand for Sterling motors, the company announces its ability to make prompt delivery on practically every model, and twenty-four-hour delivery on many of them.

The complete Sterling line for 1916 is listed in the following table:

Model	No. of Cyls.	Bore and Stroke	H.P.	R.P.M.
F	6	5½ x 6¼	65-145	6-1,500
F	8	5½ x 6¼	95-200	6-1,500
F	8	6¼ x 9	160-300	6-1,000
R-50	4	4¾ x 5½	50	1,500
R-90	4	5½ x 6¼	90	1,500
R-135	6	5½ x 6¼	135	1,500
R-225	8	5½ x 6¼	225	1,500
E-10	4	2¾ x 4½	10	1,000
E-25	4	3¾ x 5½	25	1,000
B-35	4	4¾ x 5½	35	1,000
B-55	4	5½ x 6¼	55	1,000
B-85	6	5½ x 6¼	85	1,000
F	8	5½ x 6¼	150	1,000
E-17	4	3¾ x 5½	17	600
B-20	4	4¾ x 5½	20	600
B-35	4	5½ x 6¼	35	600
B-50	6	5½ x 6¼	50	600
C-8	2	4¾ x 6	8	400
D-12	2	5½ x 7	12	400
D-25	4	5¼ x 8	25	400
D-45	4	6½ x 9	45	400
D-50	6	5½ x 8	50	400
D-70	6	6½ x 9	70	400
D-200	8	8¼ x 10	165	400

Berling Magnetos

The new Berling magneto of the Ericsson Mfg. Co., of Buffalo, N. Y., which has just bowed its way into the marine motor world, has attracted such general attention that its history should be of more than usual interest at the present time. The Ericsson plant is located out on Military Road, Buffalo, a few miles north of the plant of the Curtiss Aeroplane Co., and comprises a fine modern one-story structure, well lighted by skylights and covering a huge acreage. It was built originally by Swedish engineers and investors for the manufacture of electrical instruments of delicate mechanism, and so successfully did the business progress that it was awarded the contract for making the Tiffany clock. Five years ago Mr. Berling, a Swedish engineer, now manager of the Ericsson Co., began to devote himself to the design of a new magneto. He had in mind a magneto that could be made more simply, more rigidly, and more completely proof against water, oil and dust. Shortly after this a large motor cycle company adopted the Berling and supplied it as standard equipment on all of its four-cylinder motor cycles. Other motor cycle manufacturers followed suit, and then the Curtiss Aeroplane Co. began using eight-cylinder Berling magnetos for its aeroplane motors. At about the same time the Vim Motor Truck Co. chose the Berling for its commercial car, and then was seen the Berling operating equally successfully on high and slow speed motors. The debut in the marine field came about when Mr. Criqui, of the Sterling Engine Co., procured a dual two-spark Berling for test on one of new Model F eight-cylinder Sterlings. The magneto is declared to have withstood successfully not only long tests at the highest speeds, but an accidental but thorough drenching at the hands of a workman with a badly aimed water hose. This seemed to drive home the magneto's claim to water-proofness, for the engine continued running as if the spark producer had not been wet in any way. The Sterling Model F is now regularly equipped with the Berling magneto, and so is the new high-speed Van Blerck, so many models of which have been shipped to Russia in submarine chasers during the last few months. The Berling magneto, it is reported, will soon be ready for the marine market in four and six cylinder types.

Calendar

January 29-February 6.—Motor Boat Show at Grand Central Palace.
February 19-21-22 — Florida Midwinter Regatta, Biscayne Bay, Miami.
June 17—Annual Race, New York to Albany and Return.
June 24—New York to Block Island.
July 8—New York to Cornfield Lightship and Return.
July 15—New York to Ambrose Channel Lightship and Return.
August 15-16-17—Races for Thousand Islands Championship Challenge Cup, Alexandria Bay.
September 2-4-5—Gold Cup Races at Detroit.

I. H. Cory, Secretary Western Branch A. P. B. A., is a rooter for the Gordon reversible propeller. He claims a 15 per cent. increase

Durkee Keeps Open House

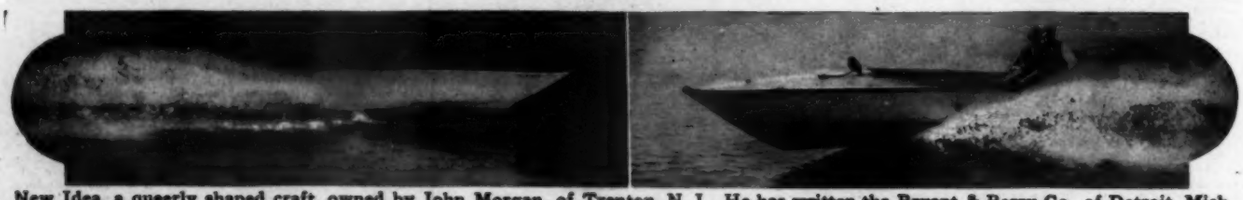
Every manufacturer and merchant in New York bestirs himself to make the week of the annual motor boat show as attractive as possible to out-of-town visitors who patronize the show. The Chas. D. Durkee Co. factory at Grasmere, S. I., now completed, will be visited by friends interested in inspecting this latest marine hardware plant, and open house will be kept at the downtown Durkee headquarters at 2 South street. This store will be made doubly attractive to visitors, as specialties not exhibited at the Palace show will be on display all during the week. It is declared that the Durkee store has never been so enticing to the boat owner as it is now under the management of Fred Mayer.

The Lockwood-Ash Line for 1916

The Lockwood-Ash Motor Co., of Jackson, Mich., which from a small beginning a few years ago has built up an unusually complete line of marine motors and an extensive business, has some very important additions and changes that will take place in its line of inboard and outboard motors for 1916. It has always been the policy of this company to investigate the actual requirements of motor boat buyers and the general tendency in the field before taking any radical steps in the way of bringing out new products or making any decided changes in its line. This conservatism, combined with an aggressive and active sales policy, has been the fundamental idea on which the L-A business is based, we understand.

The 1916 season will see the following additions and changes in the L-A line: A new four-cylinder four-cycle 14 h.p. motor will be introduced with the flywheel and other moving parts enclosed, presenting no chance for grease to be spattered about the boat; a new type of inboard canoe motor which will be made in single and double cylinder sizes is being added; a redesigned 8 h.p. two-cycle motor similar in appearance to last year's 6 h.p. model will be manu-

This is a picture of Rex Beach, the popular novelist, "going some" in his Sterling-powered Greta



New Idea, a queerly shaped craft, owned by John Morgan, of Trenton, N. J. He has written the Bryant & Berry Co., of Detroit, Mich., that the B. & B. propeller which he purchased from them has eliminated all his troubles and given him a speed of 25 m.p.h.

factured, and with its en bloc cylinders will give an unusually compact and well proportioned engine, while other slight changes and refinements will be effected on the present models. Aside from the foregoing the line for 1916 will remain practically the same as in 1915, and will consist of the L-A rowboat motor and the two-cycle models ranging in size from 2½ to 12 h.p.

New Thorobred Model

The Red Wing Motor Co., of Red Wing, Minn., builder of the popular Red Wing Thorobred line of marine motors, announces the addition of a new size, Model AA, to its line of motors for 1916. This motor has a bore of 3¼ inches and stroke of 4¼ inches and should prove an exceptionally popular model for light speed boats and launches where a large amount of power is not desired. This engine has all of the well-known Thorobred refinements, and can be supplied as a unit power plant with clutch on extended base when desired. It is listed to sell at $210 and upward, depending upon the equipment. This is next to the smallest Thorobred, the Model A being the baby of the family and selling at $180 and up.

New Caille Portable Motor Fitted with Self-Starter

The Caille Perfection Motor Co., of Detroit, Mich., has sprung a surprise in its 1916 model rowboat motors by adding another unique feature in the shape of a self-starting device at once simple and positive. In the 1915 model the manufacturers of this machine presented a type of portable motor that went far towards converting numbers of enthusiasts to this popular means of enjoying the pleasures of motor boating because of the readiness with which it permitted absolute control of full or half-speed ahead or astern or neutral position at the will of the operator. Now they call attention to the additional self-starting device which is designed to eliminate the always dreaded cranking of even a light motor and remove entirely the possibility of a more or less painful "bump" from the handle of the flywheel in cranking.

The new Caille portable motor, showing the self-starting fitting mounted above the flywheel

The Caille self-starter is a mechanical device, pure and simple. It is mounted on top of the flywheel in a drum-like enclosure of trifling weight, as shown in the accompanying illustration, and engages the shaft of the motor by a simple coil and ratchet. The operator merely takes hold of a small handle, gives a sharp pull and the flywheel instantly revolves rapidly without a touch of the hand. The motion is so instantaneous and rapid that the motor is in action in less time than it takes to describe. The handle is small and may be grasped with two fingers. A pull of just a few inches is all that is needed to set the ratchet in gear with the shaft, and no more force is required than to lift a package of a few pounds' weight. In reality, a very small child might easily start the motor at the first attempt. This self-starter is doubly valuable in that by lengthening the handle by the addition of a light line extending around the boat, the helmsman, if seated forward in the bow, may stay there and start the motor by simply pulling on the line. This completely does away with the need of going to the stern of the boat or kneeling on the seat to get the motor started.

In general design and construction the 1916 model is the same as the previous year's, but the self-starter is not the only improvement. There is a new waterproof magneto, built into the flywheel as before, but of positive water-proof, damp-resisting quality, generating a hot spark, which is warranted to ignite the fuel under most trying conditions. This magneto has undergone most severe tests practically immersed in water and was not adopted until its merits had been thoroughly proved.

A further improvement to this engine is in the muffler which is now constructed with a cooling jacket so that the motor may be handled without gloves at any time after a long run. This jacket also tends to minimize loss of power due to overheating, and to make the muffler still more effective as a silencer.

Weighing Van Blerck Reciprocating Parts

The care with which all reciprocating parts are balanced by the Van Blerck Motor Co., of Monroe, Mich., is well illustrated by the accompanying photograph showing one of this company's inspectors weighing a piston on a Toledo scale. This scale is used instead of an ordinary beam scale, as limits of especially close measurements and weights are prescribed for all parts of the Model E Van Blerck. The inspection of pistons is declared to be particularly rigid, and each one is not only carefully calipered for thickness of piston head, but is also weighed, any being rejected that prove other than standard weight.

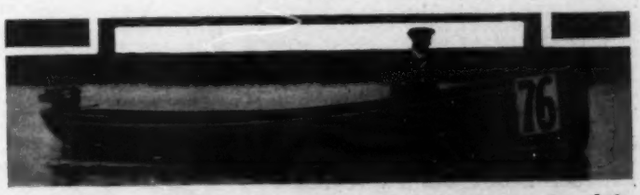
Weighing Van Blerck reciprocating parts on a Toledo scale. Especially close measurements and weights are prescribed for all parts of the Model E Van Blerck

Ferro on the Island of Jura

The island of Jura is one of the larger islands in Argyle, Scotland, and it is made conspicuous by the "Paps of Jura" which are the landmarks of the Hebrides. This island is noted for its cattle, sheep and distilleries. In the accompanying photograph is shown J. R. Ferguson, owner of the Jura distilleries, in his 18-foot boat, with a Ferro rowboat motor attached. He has written the Ferro people that he is delighted with the engine in every way and that he obtains a speed of six knots from it.

Rex Beach Goes Some

Rex Beach, the popular writer of Going Some, The Silver Horde, The Ne'er Do Well, and other thrilling novels, is especially fond of motor boating. When he is not engaged in globe-trotting for literary material Mr. Beach summers at Lake Hopatcong, N. J., and here he has Greta, a C. C. Smith mahogany hydroplane, 20 feet long by 6 feet beam, powered with a Model B 50-85 h.p. Sterling. Although speed motor boating is a very popular pastime with the Lake Hopatcong colony, and the local fleet includes not a few unusually fast boats, Mr. Beach's craft, illustrated on page 36, is declared to have sufficient speed to clean up anything in that part of the country. He writes the Sterling Co. as follows: "The Sterling engine is working very well, so well, in fact, that I have a larger boat powered with one of your machines. Yours very truly, Rex Beach."

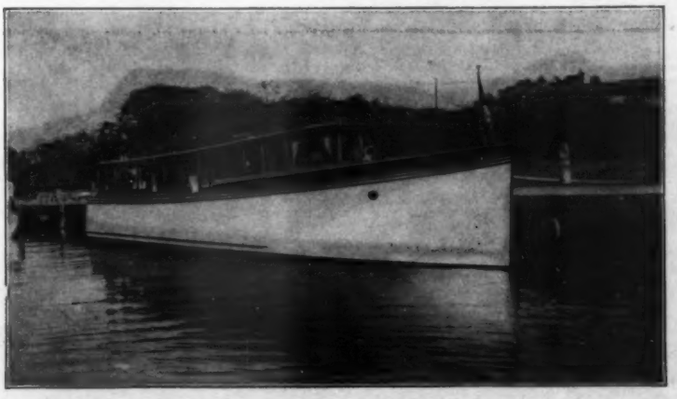


Ferro rowboat motors are in use in many out-of-the-way parts of the world. This one is seen driving an 18-foot boat in Argyle, Scotland

Dorothy, a Modern Mail Packet

Dorothy, owned by G. T. Goodman, of Lake Geneva, Wis., offers a striking example of the efficient stage to which marine engines have been developed. Launched early in 1914, this boat has run each season, navigation permitting, a distance of 100 miles per day, carrying Government mails and local tourists. It was through Dorothy's ability to give continuous, reliable service that the mail contract was awarded Mr. Goodman by the Government.

To date Dorothy's power plant remains the same as originally installed, not a single adjustment or repair having been found necessary. She is 45 feet overall, by 8 ft. beam and her six-cylinder, 60 h.p. Model 14 Loew-Victor drives her at a speed of 15 miles per hour.



Dorothy is a modern mail packet, powered with a 60 h.p. Loew-Victor, which has averaged 100 miles per day, navigation permitting, since early in 1914

New Firm Represents Scripps in Charleston

Arrangements have recently been completed whereby the Gas Engine & Electric Co., of Charleston, S. C., has been commissioned to represent the Scripps Motor Co., of Detroit, Mich., in the seaboard counties of the southern State. The officers of the company are: H. Stevens White, president; J. F. Riddle, vice-president; and Arthur D. Wall, secretary and treasurer. The company, though young, has demonstrated its ability to sell high-grade motors during the eight months of its existence. Not only will this company handle Scripps motors, but it will maintain a service station very convenient to boat owners making the northward trip from Florida next spring.

Van Blerck Domestic Business Booming

The Van Blerck Motor Co., of Monroe, Mich., announces that it now has so much domestic business that it doesn't care any more about war orders. A year ago in one of the fall months the members of this concern thought they were doing well when they garnered four orders. This year during the same period, we understand, they booked orders slightly exceeding a $90,000 total—some difference. Some of the more important sales are listed in tabular form below:

Builder	Owner	Model	Installation
Murray & Tregurtha	U. S. Aviation Corps	Two E-8	32' Sea Sled
Murray & Tregurtha	———	Four E-8	Sea Sled
Matthews Boat Co.	John Ringling	E-6	32' Hand ex. cruiser
		E-8	Hand 40-footer
Gas Engine & Power Co.	Houston Wyeth		
Britt Bros.	Bernhard Zahn	E-8	40' ex. cruiser
*Whitaker	E. K. Hardy	E-6	40' ex. cruiser
Church Boat Co.	Chas. W. Kotcher	Two E-6	60' ex. cruiser
*Bowes & Mower	Louis Burke	E-8	Express runabout
U. S. Government	———	Five E-6, Two E-4, One E-8	Various Gov. boats
Wm. H. Hand, Jr.	———	Four E-6, One E-4, One E-8	V-bottom boats
Albany Boat Co.	———	Three E-4, Two E-6	Stock boats
Goodhue & Hawkins	———	E-4, E-6	Stock runabouts
———	Aug. Heckscher	Four V-type 12-Cylinder	110' Cabrilla
Luders Marine Const. Co.	Carl J. Stein	E-6	V-bottom cruiser
Rober Mach. Co.	———	Two E-6	32' Seine boats
St. Louis Y. & B. Co.	———	Four E-6, One E-8, One E-8	Various models

*Designers

Luma II, a Scripps-powered boat, which figured in a rescue in Boston waters last summer

Niagara Motor Boat Co. Increases Capital

The Niagara Motor Boat Co., of North Tonawanda, N. Y., has just increased its capital from $20,000 to $50,000, and has elected the following officers: Covert Robertson, president and treasurer; Frederick Robertson, vice-president; and James E. Robertson, secretary. During the past year this concern has put in an addition to its plant which gives 5,000 feet more floor space.

This 25 x 4½-foot runabout is owned by George Burdick, of Big Moose, N. Y., and is powered with a 25-30 h.p. Buffalo, with which outfit it makes exceptional speed

Fulton Has New Baltimore Agent

In the past the Fulton Mfg. Co., of Erie, Pa., has always maintained a service department in Baltimore, but this has not been as complete as could have been desired. The company has recently procured a new agent, the John R. Mitchell Co., foot of Washington street, Baltimore, Md. This company is equipped with a complete line of machinery so that it can attend to any of the requirements of the Fulton Co.'s customers, and it also has on hand a full line of repair parts. The John R. Mitchell Co. is situated in the heart of the oyster fitting-out section of Baltimore, called Canton.

Evinrude Brings Out Two-Cylinder Four-Cycle Motor

One of the most important announcements regarding detachable rowboat motors for 1916 is that of the Evinrude Motor Co., of Milwaukee, Wis., to the effect that it will place on the market in January a two-cylinder four-cycle motor. The Evinrude has heretofore been obtainable only in the single-cylinder form, but as the use of outboard motors spread and boat builders began to design hulls especially for detachable motors, there has sprung up an insistent demand for a more powerful and speedier motor. In the new motor the two cylinders are opposed, the result being a motor that is almost vibrationless in operation.

Improvements have been made in the built-in magneto and automatic reverse (features of the 1915 model) and a new method of mounting has been adopted which makes it possible to tilt the motor inboard so as to clear shallows and obstructions. The new motor develops 4 h.p. and should prove popular with those who demand speed as well as convenience and economy of operation. Although twice as powerful as the single-cylinder type the two-cylinder model does not greatly exceed it in size and weight and may be carried to lake, river or seashore and instantly clamped to any available boat.

The Evinrude Co. also announces for 1916 an entirely new line of inboard motors for canoes—two-cylinder, tandem type. The standard line of single-cylinder outboard motors will, of course, be continued and certain improvements suggested during the development of the two-cylinder motor will also be incorporated in the single-cylinder 1916 model.

A Difficult Combination to Beat

The Carlyle Johnson Machine Co., of Manchester, Conn., has received a letter from E. J. Mallon, of Ticonderoga, N. Y., in which many pleasant things are said about the Johnson reverse gear. Parts of the letter follow: "Two years ago I purchased a No. 2 gear from you through the Ticonderoga Machine Works of this place, and this season I have run my hydro (E. J. M.) over 5,000 miles without one second's gear trouble, and mind you that over 3,000 miles of this has been at high speed (20 to 24 miles per hour). I have won two cups and three medals—that is, three firsts and one third out of four starts. I take great pleasure in congratulating you upon the continuously good performance of your gear under any and all circumstances, and I certainly have put it to some severe tests—one in particular, twelve hours straight at 20 miles per hour and never so much as warmed it. I also give my gear a great deal of the credit in winning the races this season."

A photograph of E. J. M., taken at about 25 miles per hour, is shown in the accompanying reproduction.

Fulton Oil Engines

In the past years various engine builders, including the Fulton Mfg. Co., of Erie, Pa., have experimented with kerosene burners with more or less satisfactory results. The Fulton now has a burner which is stated to give the same results as a gasoline carbureter without carbonizing the engine any more. Furthermore, as the kerosene is injected straight into the cylinder above the piston directly from the kerosene carbureter and is not, therefore, drawn through the crankcase, there is an elimination of one of the old troubles—namely, the burning out of the bearings by the kerosene in the base.

In the past couple of years there has not been a great demand in this country for kerosene engines, as the difference in cost between gasoline and kerosene was very slight; therefore most of the Fulton kerosene burner motors have gone to Newfoundland, where the 5-6 h.p. and 7½-9 h.p. self-sparking engines are mostly in demand. They are put to very hard use in fishing boats and receive little or poor attention. These engines are ordinarily equipped with a gasoline carbureter for starting, but the Newfoundlanders in many instances do not use the gasoline carbureter at all excepting for the intake of air into the crankcase. To start the engine they merely prime the cylinder through the priming cup and then start directly on kerosene. In view of the rapidly rising price of gasoline it is expected that these models will find a much more extended market in the United States.

The most interesting product of the many which the Fulton Co. has on the market is the oil engine of the straight Diesel type on which it has been working three years and which is now on a commercial basis. One of these engines has been running the 54-foot tug, Pointer, owned by the Maryland Steel Co., Sparrow's Point, Md., for over a year, making daily runs. Economy is, of course, the great point of a Diesel engine. The company states that to run a 100 h.p. engine—either a Fulton or any other Diesel—it requires about 6¼ gallons of oil, and this at three cents per gallon would amount to 18¾c per hour, or in a day of ten hours, $1.87½, and in a year of 300 days, $562.50. A similarly powered gasoline engine with gasoline at twelve cents a gallon would cost $4,500 a year to run. In other words there would be a saving in one year amounting to $3937.50 on fuel.

Red Rover

The Roberts Motor Mfg. Co., of Sandusky, O., has received a photograph from George P. Taylor, of Blodgett Landing, N. H., illustrating his 35-footer

Here is a fast sight-seeing boat owned by George P. Taylor, of Blodgett Landing, N. H. Red Rover is powered with a 40 h.p. Roberts motor, three years old, which gives a sustained speed of 21 miles

Red Rover going along at a 21-mile clip. The boat is of Mr. Taylor's own design and construction, built of solid mahogany and finished in the natural wood, and is 35 feet long by 5 feet beam. Red Rover is used for taking sight-seeing parties around Lake Sunapee, where Mr. Taylor's boat livery and boat building establishment is located. The complete trip is 39 miles in extent, and it is stated that Mr. Taylor's son, who is captain, engineer and crew of the outfit, made the trip several times each day during the months of July and August, taking just two hours to the trip. The owner declares that he has carried hundreds of people in the boat and that it is always a great satisfaction to talk with his passengers after they have completed the journey, as they always wear a smile that won't come off.

Incidentally, the motor installed has now done service in the one hull for three seasons continuously. It is the Roberts motor Model 4 P four-cylinder outfit, rated at 40 h.p., which has won a name in many other boats of different sizes and types for reliability and consistency of performance.

Luma II

When E. Waldo Reed, of Boston and Hull, decided to have a big family runabout last summer he selected his power plant with care, and put in a model K 5½ x 6 inch 48 h.p. Scripps. C. B. Tilden, of North Scituate, Mass., built the boat, Luma II, which is 35 x 6 feet 8 inches and heavily constructed. Mr. Reed had an interesting experience when he and his mechanician, Fred Souther, drove their boat up alongside the burning Nautilus and took off eleven passengers. Nautilus was a 57-footer owned by Louis T. Carey, of Boston, which burned and sank off Peddock's Island the Sunday before Labor Day. An idea of the difficulties under which the rescue was performed can be had when it is stated that the top of Luma II caught fire while the unfortunate passengers were being taken

Elsa II Sold to R. A. Rogan

Ralph A. Rogan, of the Proctor & Gamble Co., of Cincinnati, O., has purchased the 45-foot raised-deck cruiser Elsa II, built by the St. Louis Yacht & Boat Co., of St. Louis, Mo., for Judson H. Boughton, of that firm, who with his family has made several round trips to Northern Lake Michigan and return. Elsa II has also done considerable cruising in the Mississippi River and its tributaries and is one of the most attractive and best known pleasure boats hailing from St. Louis.

Elsa II is one of fourteen of the same model built by the St. Louis company for use principally on the Great Lakes.

A 19-foot Hacker hydroplane equipped with a Smalley motor and a No. 2 Carlyle Johnson reverse gear. The owner, E. J. Mallon, considers the combination of motor and clutch hard to beat

Majano, a 32-foot Niagara runabout, owned by W. S. Benson, of New York City. This boat is of stock design and is luxuriously equipped in every way

Gulf and the Mississippi River and tributaries, has an owner's stateroom forward with accommodations for from two to four, and a large lavatory and clothes press adjoining. Then there is a main cabin or dining saloon accommodating eight by day and four by night, to say nothing of the galley with range, refrigerator, sink, larder and seat berths. The boat is electrically lighted and hot-water heated. It is operated and controlled by one man from the pilot-house and has a cruising speed of 12 miles per hour. Elsa II will be used by the new owner out of Harbor Point, Mich., where Mr. Rogan makes his summer headquarters.

Milbrath-Williams

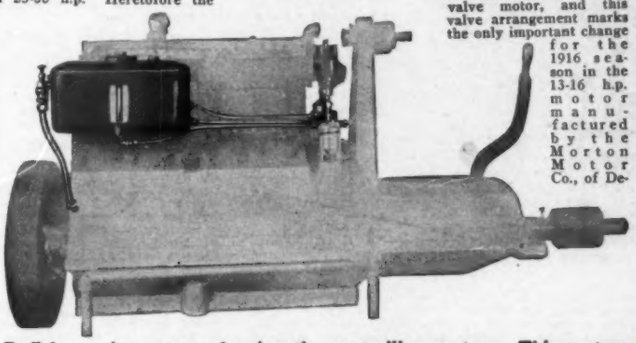
A. F. Milbrath, secretary and chief engineer of the Wisconsin Motor Mfg. Co., of Milwaukee, Wis., was married on November 30th to Miss Maude Williams of the same city. Mr. Milbrath is the man who designed the Wisconsin racing motors which achieved such a remarkable record during the racing season of 1915.

A Gordon Booster in Cuba

The exhibit of the Gordon Propeller Co., of Cleveland, O., in Machinery Hall at San Francisco was recently visited by R. E. Moore of Caimanera, Oriente, Cuba. Mr. Moore purchased a large wheel about a year ago. He states that while attending the exposition, he came to Machinery Hall especially to look over the latest Gordon models and inform the company of the great satisfaction he received from his propeller. The best proof of Mr. Moore's satisfaction is his promise of an order for another wheel in the very near future, for an additional boat soon to be added to his present fleet.

Buffalo Oiling System

The Buffalo Gasoline Motor Co., of Buffalo, N. Y., has announced radical improvements in the oiling system of the two Buffalo Auto Marine engine models rated at 16-20 h.p. and 25-30 h.p. Heretofore the lubrication of these engines has been by means of a constant level splash system, which worked with perfect success in most installations, but failed to give results up to the high Buffalo standard when the engine was installed at an unusual angle, the oil having a tendency to drain aft and starve the forward cylinders. The new oiling system is designed to take care of this point. The oil instead of being kept in the case is contained in a tank at the side of the cylinders where it is easy to get at. After the oil is taken from the pump it passes through a sight-feed glass gauge located at the forward end of the tank, or if the boat has bulkhead control a flush bull's-eye type of drip gauge is supplied, so that the operator can see at all times just how much oil is being forced through.



Buffalo marine motor, showing the new oiling system. This system is described in the accompanying text

The new system includes two gear pumps. One of these takes the oil from the tank and forces it into the splash pit at the forward end, from where it flows over dams into the other splash pits. After overflowing from the last one it gathers in a reservoir below, where it is taken by the other gear pump, which is of larger capacity, and forced back into the tank, located at the side of the cylinder, this cycle of operation repeating itself all the time the engine is running.

X-Celo Models for 1916

The Milwaukee Yacht & Boat Co., of Milwaukee, Wis., designer and builder of the X-Celo Runabouts, has just made announcement of its models for 1916. There will be no marked changes in general, as this company has only sought to refine and improve its popular line of standardized runabouts. There has been but one new model, or rather size, added for the coming year.

The four-passenger, eighteen-foot Wee-X-Celo, which was introduced by the Milwaukee Co. last year met with very popular favor. It will consequently be continued for the coming year, with some added refinements. The standard power plant will be the four-cylinder, four-cycle, 16-20 h.p. Gray motor. With this power equipment the boat, it is declared, makes 17.5 m.p.h. The engine equipment is, however, optional, as the hull is well suited for a motor of less or more power.

The 26-foot Milwaukee model, which is well known to the boating public, will also be a member of the 1916 X-Celo family, and the E-1 Sterling engine will be furnished as standard power. With this motor a conservative speed of 15 m.p.h. is guaranteed. While the 26-foot Milwaukee is somewhat less elaborate in its appointments and equipment than the larger and more expensive models, it is nevertheless considered a thoroughly high-grade boat, which has added many enthusiasts to the list of X-Celo owners.

The 28-foot fast runabout, the 30-foot family boat and the 33-footer are the De Luxe models, which remain practically unchanged, except in small details. The new 35-footer is the only really new addition to this very complete popular line of runabouts.

The Morton Motor

There seems to be a trend in marine engine design toward the overhead-valve motor, and this valve arrangement marks the only important change for the 1916 season in the 13-16 h.p. motor manufactured by the Morton Motor Co., of Detroit, Mich. The use of overhead valves has increased the power output of this engine, and it is now rated at 16 full h.p. at 1,000 r.m.p. This motor, which is a mighty compact, efficient-looking job with its en bloc cylinders, is made in a factory which for several years has supplied several motor car manufacturers with crankshafts. Further mention of this motor will be made later.

Representatives from three foreign countries at the Sterling Plant. From left to right: C. A. Criqui, president of the Sterling Co.; Blom Furuholmen, Norway; George F. Joseph, England, and Sig. Lanteruro, Italy. The motors in the background are being tested.

Bosch Adds to its Springfield Magneto Factory

The already extensive Springfield, Mass. factory of the Bosch Magneto Co., in which all Bosch magnetos sold in this country have been manufactured since its complete occupation in 1912, has been further augmented by a large addition providing more than 60,000 additional square feet. The new building, it is said, makes the Bosch factory the largest works in this country for the production of magnetos. It is now well along toward entire completion, and is a single story building with a frontage of about 175 feet on the main street, with a connecting building and shipping hall, which also provide considerable new space.

The outside walls of the new building are of brick and concrete and are in keeping with the present rich appearance of the main building. The roof is arranged in saw tooth form providing the maximum of light and ventilation, for the new building will be completely filled with large automatic lathes and machines of similar character, it being the intention of the management to segregate this type of work in a single section if possible. The new building is especially suited for the purpose, since its construction permits the best possible lighting conditions.

A Gray Model D plowing its way across country. The owner of this unusual outfit, John B. Underwood, of Glen Elder, Kan., considers a marine motor thoroughly adapted to this type of tractor service

Plowing with a Model D

The verb to plow is used in this magazine usually in a nautical sense, but here is a case in which it reverts back to its original significance. John B. Underwood, of Glen Elder, Kan., who does his farming on modern, up-to-date lines, found that a motor plow would help him out in his back-to-the-land movement, but understanding that an automobile motor is not designed for or capable of hard, continuous service, looked to the marine engine field to satisfy his needs. The result of his search is illustrated in the accompanying picture of a four-cylinder 3¼ x 4½-inch Model D Gray hooked up to a plow and turning up the rich black Kansas earth at a lively rate. Mr. Underwood has written the manufacturers, the Gray Motor Co., of Detroit, Mich., as follows: "The idea of using the marine type of engine with its enormous power for the weight, and its ability to stand up under continuous hard service, proves out in practice as well as theory." This certainly seems to bear out the contention of the Gray company that the Model D is the universal marine engine.

Hyde Propellers

With the recent introduction of the Gale propeller the Hyde Windlass Co., of Bath, Me., brought its line up to three kinds of wheels which are made in all the usual sizes and pitches. The most famous propeller manufactured by this company is the Hyde Turbine Type, a three-bladed wheel which is used not only on motor craft, but on battleships, torpedo boat destroyers, submarines, etc., of the U. S. Navy. This propeller is made of the celebrated Hyde manganese bronze, which is prepared to meet the U. S. requirements of 65,000 pounds tensile strength, 30,000 pounds elastic limit and 20 per cent. elongation in two inches. Hyde Turbine Type propellers from eight to fifty inches in diameter are covered by the Hyde guarantee against breakage, wherein a new propeller will be furnished without charge if a blade is broken off while in use. The second type of Hyde wheels is known as the No-Weed. The same bronze and the same generous blade area which characterize the other type of propeller are evident in this wheel, which has the added advantage that it will not collect weeds or other foreign matter. The Gale propeller is made from the same patterns as are used in the Turbine Type, but the wheels are expressly put out to sell at a lower price than the others and so it is impossible to guarantee them in regard to breakage and balance. They are declared to be, however, exactly as represented—good propellers for less money.

Everett Hunter Line

The Everett Hunter Boat Co., of McHenry, Ill., is planning to have a very fine line of boats for 1916, and is getting out samples now which it aims to carry in stock for immediate delivery, while it hopes to have enough boats of each size on hand so that those who order late in the spring will not be disappointed. The complete line for 1916 as now announced will consist of the following models in four different types. In the family runabout type there will be models in 16, 18, 19, 21, 23, 25, 27½ and 31-foot sizes at prices ranging from $150 up. In the auto type there will be three models, 22, 25 and 31-feet in length respectively and there will also be a 21-foot V-bottom model. The two sizes in which this company will specialize are a 19-footer and a 21-footer, which will be furnished complete with a four-cylinder, four-cycle motor, having an electric starting and lighting outfit as standard equipment. These boats will have the engine installed under a forward deck and will be equipped with automobile control, reverse gear, cushions, etc. The speed will be around 12 miles per hour, and the price quoted will be less than that of a certain widely used motor car.

Service for Loew-Victor Owners

The Loew-Victor Engine Co., of Chicago, Ill., with the opening of its own Eastern sales office and service

A 28-foot X-Celo runabout, built by the Milwaukee Yacht & Boat Co., and equipped with a 100 h.p. motor, which gives a speed of a trifle better than 30 m.p.h.

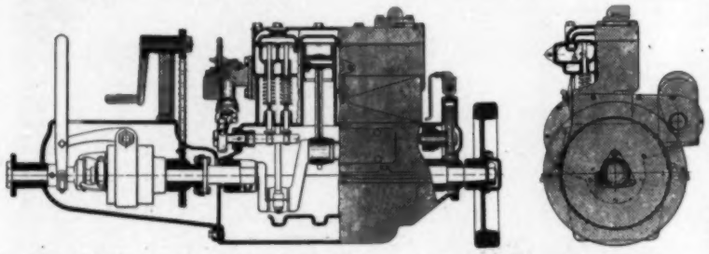
station in the new Equitable Bldg., New York City, is going to inaugurate what it claims to be the most perfect service system ever rendered to owners of marine engines. In order to assist the company in carrying out its plans, all Loew-Victor owners along the Atlantic Coast and Eastern Canada are asked to communicate with it at 120 Broadway, New York City, giving the serial number of their engines regardless of age.

Practically 75 per cent. of the original Loew-Victor models built by the Loew Mfg. Co. in Cleveland, 1900-1910, are in use in the East, but the Loew-Victor Engine Co. has no very complete records as to the whereabouts of the old machines. As the service the company desires to render all Loew-Victor owners, whether old or new, is free, you would better write the company at once if you belong to the Loew-Victor family.

Improved Universal Motor for 1916

The Universal Motor Co., of Oshkosh, Wis., has recently brought out a new motor including many improvements over the 1915 model. The new motor is known as Model C and has a bore of 2¾ by a stroke of 4 inches. Many improvements in details have been made, such as adjustable valve tappets, taper flywheel fit, completely enclosed reverse gear, handhole plate for inspecting crankcase, removable oil pump, oil packing at both ends of the shaft to prevent oil leaks, plunger oil pump, flexible propeller shaft coupling, adjustable main bearings, etc.

The lubrication is automatic by plunger pump and sight feed, and an oil float gauge is provided to show the oil level while filling. The motor is capable of high speed if desired dependent, of course, partly on the pitch of the propeller, but the best work in speed boats is done at around 1,700 r.p.m. while in family boats 1,200 r.p.m. is a fair average.



Sectional plan and end view of the 12 h.p. Universal motor, which is being brought out with many improvements over the 1915 model

A Correction

The paragraph on page 57 of the December issue pertaining to the products of the Sumter Electrical Co., of 1413 Michigan Ave., Chicago, Ill., was rather loosely phrased and might have given the impression that the low tension magnetos put out by this concern are known under the trade name of "Dixie." This name is limited entirely to the extensive line of high tension magnetos manufactured by this firm, and the low tension instruments, of which the Imp, illustrated in our previous issue, is one, go under the name of "Sumter" and "S-M."

Details of the 14 H.P. Motorgo

As announced in this section last month, Sears, Roebuck & Co., of Chicago, Ill., are now offering a 14 h.p. four-cycle motor in addition to their line of two-cycle Motorgo marine engines. This motor is designed along thoroughly up-to-date lines and gives an extremely clean-cut, sturdy and businesslike appearance. The flywheel and all other moving parts are enclosed and quietness and cleanliness are two of the chief features. Accessibility is another point toward which the designers have worked in producing this engine, and the cylinder head is easily removable, while large handhole plates at the base permit the reciprocating parts to be reached in short order. The cylinders have a bore of 3¼ inches by a stroke of 4½ inches, and the rated 14 h.p. is obtained at a speed of 800 r.p.m., although the extreme range is declared to extend from 200 up to 1,500 r.p.m. Jump spark ignition is employed, and a high tension single system magneto is regularly equipped. A Schebler carbureter will be standard equipment. The water pump is of the rotary type, and the lubricating oil is circulated by a plunger pump driven off the camshaft, maintaining a constant level splash system with direct oiling to the main bearings.

A Minnesota Hummer

Probably the fastest displacement runabout in Minnesota, if not in the entire north-central section of this country is the one owned by W. J. Murphy of Minneapolis, editor of the Minneapolis Tribune. The boat is Crouch-designed, of the Cinderella type, and is 35 feet long, with a beam of 6 feet and a draft of 28 inches. She is powered with the Sterling Model R, six-cylinder 5½ x 6¾-inch machine, which develops 135 h.p. at 1,500 r.p.m. This is the type of Sterling which has been used with great success in a large number of the Crouch Cinderellas or wave-collector runabouts, the four-cylinder R-90 being placed in the smaller hulls and the six-cylinder R-135 in the larger.

Tribune, a fast Cinderella-type runabout, owned by W. J. Murphy, editor of the Minneapolis Tribune, and built by the Ramaley Boat Works, of Wayzata, Minn. She is equipped with a Model R. Sterling, and attains a speed of 33 m.p.h.

Tribune, for Mr. Murphy has named his craft after his newspaper, was built by the Ramaley Boat Works, of Wayzata, Minn. She has a speed of 33 miles per hour.

Palmer Bros. Building Two Sizeable Craft

Palmer Bros., of Cos Cob, Conn., are building two 45-foot motor boats for delivery in the spring and work on them is reported to be progressing very favorably. One of these 45-footers is a fishing boat with 12 feet beam which will be used out of Sheepshead Bay for fishing in the Atlantic. It is arranged with a small cabin aft and open cockpit forward. A six-cylinder 50 h.p. Palmer motor will be installed and the total cost will be somewhere around $3,000. The other boat is a bridge-deck cruiser with cabin forward having two berths, engine-room amidships and owner's quarters aft. This boat will be of mahogany finish throughout and will be completely equipped with electric lights, etc. A 35 h.p. Palmer motor will be installed.

Boat-Building in Upper New York

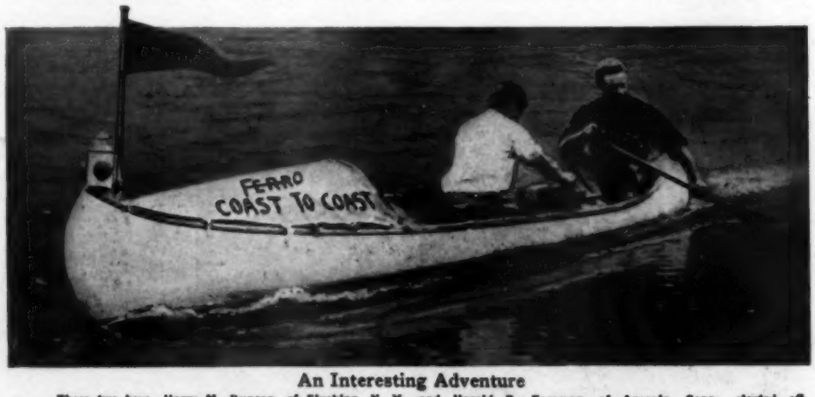
Sidney M. Cole, of Waddington, N. Y., informs us that he has under way a fine 36 x 7 foot concave bottom, mahogany runabout from designs by Howard A. Gardner, of Rochester, N. Y. This boat, which will be powered with a six-cylinder four-cycle engine, will be planked with mahogany having white oak under-framing. With nickel-plated trimmings, top and windshield it is expected to make a very handsome job. Other craft which will soon be under construction at this yard are a 20-footer and a 26-footer from the board of the same designer.

Ginman Builds Boat for U. S.

We are informed that the Ginman Boat Co., of Muskegon, Mich., is building for the Lighthouse Service of the United States Government one 20-foot lightvessel tender and two 25-foot lighthouse tenders for use on the Great Lakes. All of these boats will be equipped with Kahlenberg motors.

Governor Whitman's Barge

One of the photographs on this page shows Frisbie 30, a 53-footer owned by D. O. Makean, of Green Island, N. Y., and used last spring by Governor Whitman and his staff on an inspection of the completed work of the State barge canal. This craft, which is used on contract work for the U. S. Engineering Department, has been driven at an average of forty miles a day since launching last March, and the owner states that his motor, a 30 h.p. Frisbie has never required repairs of any sort, while the original spark plugs are still in use. Although the boat is large and of rather heavy construction, the Frisbie motor drives her without being pushed to the limit at a speed of 12 miles per hour, and her owner writes us that when standing at or near the wheel, there is so little vibration that one would hardly know the engine was running. Frisbie 30, which has been engaged in stiff towing and transport work, was recently brought to New York waters for use in a similar capacity until early spring.



An Interesting Adventure

These two boys, Harry M. Duncan, of Flushing, N. Y., and Harold D. Foreman, of Ansonia, Conn., started off with their Ferro-driven canoe to span the distance between the east and the west coasts. They went through the Chesapeake and Ohio canal, and from the Ohio River down to the Mississippi. At the mouth of the Missouri River, while riding a river steamer's waves, the canoe struck a sand bar and capsized. This catastrophe put an end to their journey, as the young men had only fifty cents between them with which to effect repairs. They report enthusiastically, however, on the operation of the Ferro outboard motor up to the time it was put out of commission, through no fault of its own

This 53-footer, Frisbie 30, is owned by D. O. Makean, of Green Island, N. Y., and has been used by Governor Whitman in his inspection of the State Barge Canal. It is powered with a 30 h.p. Frisbie motor

V-Ray Adopts Checkered Design

The V-Ray Co., of Marshalltown, Ia., has adopted a new black-and-white checkered design, which will be prominently featured in everything V-Ray—*i.e.*, containers, cartons, advertising matter, shipping cartons, etc. The company has found it necessary to take this action to protect itself from imitators who have from time to time brought out a somewhat similar carton, with the evident intention of "stealing some of the V-Ray thunder."

The V-Ray product for 1916 will carry no radical change in design, but the manufacturers will strongly feature their new "Petriflint" core, a substance declared to be many times harder than the ordinary porcelain, and the "Violet-ray" electrodes with which all V-Rays are now equipped. This is an alloy of a secret composition, which has proven in many tests its power to withstand the most intense heat without fusing or burning off.

Emery Starts Yacht Brokerage

John S. Emery & Co., Inc., of 114 State St., Boston, Mass., in connection with their long established sail and steamship business have opened a yacht brokerage department, where a complete list of all types of pleasure boats will be offered for sale and charter.

(*Continued on page 52*)

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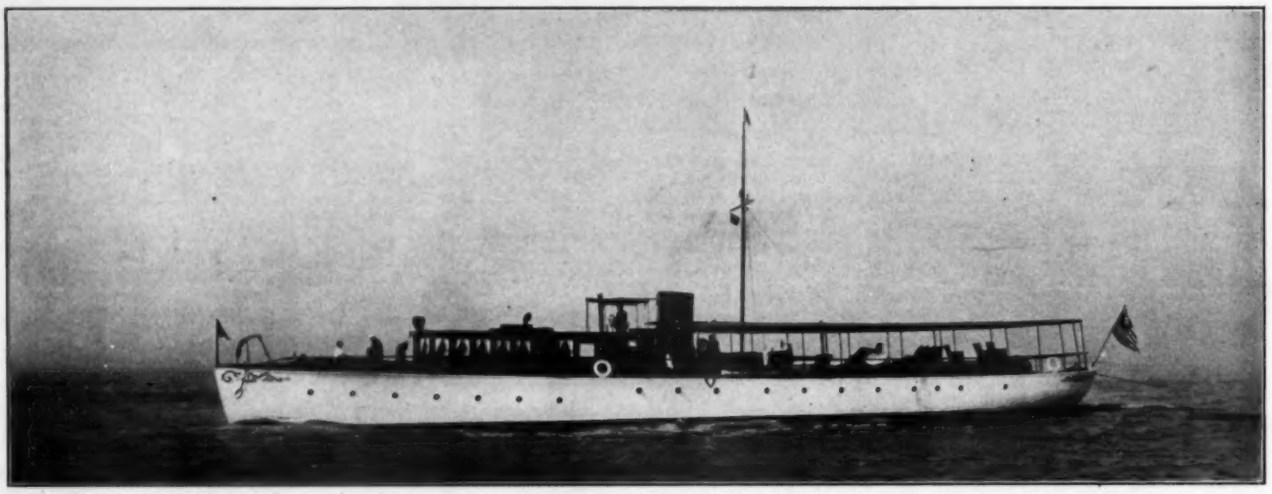
Naval Architects and Yacht Brokers.

COX & STEVENS

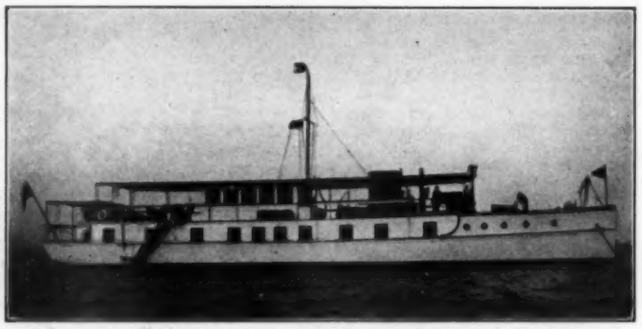
15 William St., New York
Telephone—1375 Broad
Cable—BROKERAGE

We have a complete list of all steam and power yachts, auxiliaries and houseboats available FOR SALE and CHARTER. A few are shown on this page. Plans, photographs and full particulars furnished on request. Catalogue illustrating types and sizes of yachts we have for sale will be mailed on application.



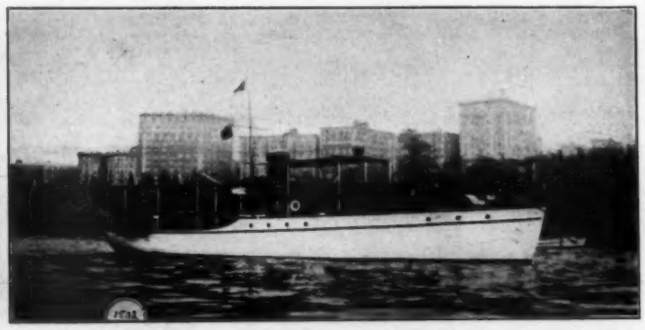
No. 885.—For Sale or Charter.—Handsome fast 120 ft. twin screw, steel power yacht. Speed up to 18 miles. Large dining saloon on deck, three double staterooms, main saloon, two bathrooms, etc. Price attractive. Cox & Stevens, 15 William St., New York.

No. 85.—For Sale or Charter.—200 ft. steam yacht, speed 12 to 14 knots. Very able and roomy craft. Price attractive. Cox & Stevens, 15 William St., New York.

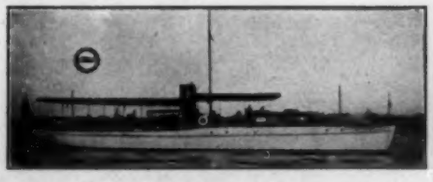


No. 2100.—For Sale or Charter.—Modern twin screw gasoline houseboat; 95 x 19 x 3.3 feet. Speed 13-14 miles; two 100 h.p. motors. Large social hall on deck. Dining saloon, four double staterooms, bath, etc. Very desirable craft. Cox & Stevens, 15 Williams St., New York.

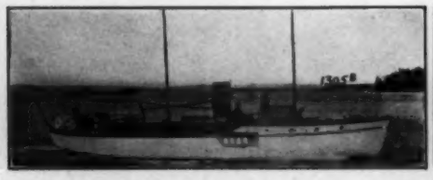
No. 1820.—For Sale.—Especially desirable, up-to-date, twin screw cruising power yacht; 98 x 16 x 4 ft. Speed 14-15 miles. Large dining saloon and galley on deck; four staterooms, two bathrooms, etc. Low price. Cox & Stevens, 15 William St., New York.



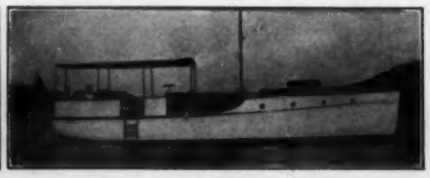
No. 1532.—For Sale or Charter.—Very desirable twin screw power yacht; 75 x 13.6 x 4 ft. Speed 12-14 miles. Recent build. Dining saloon and galley forward; three staterooms, bath, etc., aft. Price attractive. Cox & Stevens, 15 William Street, New York.



No. 1744.—For Sale.—Attractive twin screw gasoline cruiser; 67.6 x 13.6 x 4 ft. Highest grade construction by well known firm. Speed 11-12 miles. Standard motors. Dining saloon and galley forward; two double staterooms and bath aft. Price low. Cox & Stevens, 15 William St., New York.



No. 1305—For Sale.—Bridge deck cruiser. 50 x 10.9 x 3.6 ft. Speed 11-12 miles; 25-35 H.P. Standard motor. Double stateroom, saloon, etc., handsomely finished in African mahogany. Price very low. Cox & Stevens, 15 William St., New York.



No. 1075.—Raised deck cruiser, 40 x 9.8 x 3.6 ft. Built 1911. Standard motor; speed 10 miles. Double stateroom, saloon, etc. Roomy after deck. Price low. Cox & Stevens, 15 William Street, New York.

STANLEY M. SEAMAN

TELEPHONES { 3479 / 3171 } CORTLANDT

YACHT BROKER

CABLE, "HUNTSEA," N. Y

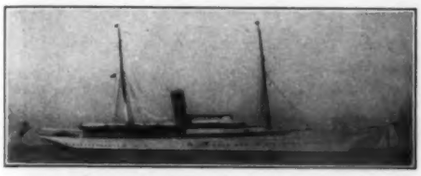
BRITISH CORRESPONDENT

220 BROADWAY, N. Y.

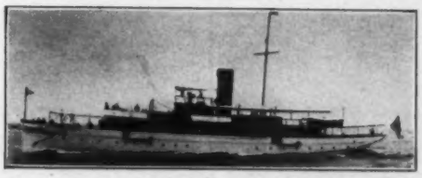
(ESTABLISHED 1900)

MARINE INSURANCE

If in the market to Purchase or Charter a Yacht of any character it will pay you to obtain my new 1916 Illustrated Yacht List—just published—before deciding elsewhere. Mailed free upon application.

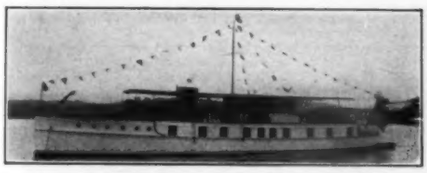


8014.—282-foot Steel Twin Screw Ocean Cruiser. Speed 15 knots. Luxuriously appointed.

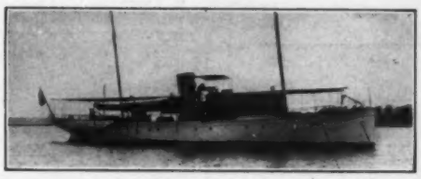


8164.—177-foot Steel Twin Screw Sea Cruiser. Moderate draught. Unusual accommodations. Speed 15 knots. Best finish and appointments.

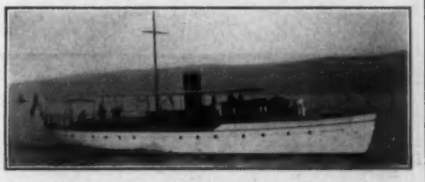
8001.—105-foot Twin Screw. 4 staterooms. 2 baths. Standard motors. Speed 21 miles.



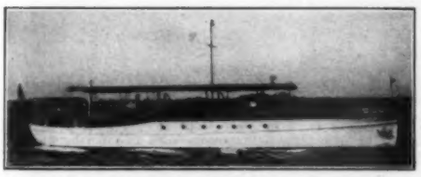
7744.—95-foot Twin Screw Ideal American Cruiser. 3 ft. 3 in. draught. 4 staterooms. 2 baths. Speed 14 miles. Hot water heat. Perfect condition



7920.—94-foot Seagoing Cruiser. 300 h.p. Standard motor. Every convenience; 4 staterooms.

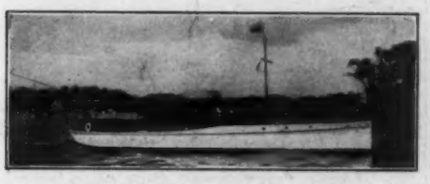


8150.—84-foot Twin Screw Cruiser. Launched 1914. 2 staterooms. Speed 12 miles.



7978.—78-foot Twin Screw Shoal Draught Cruiser. 3 staterooms. Bath. Unusual construction.

8103.—71-foot Twin Screw. Built by Luders 1912. 2 staterooms. Bath. Speed 13 miles.



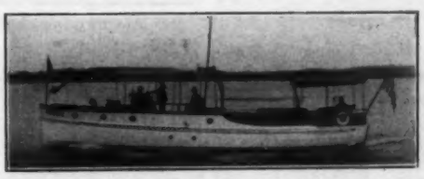
7618.—60-foot. Best workmanship and finish. Speed 13 miles. Beautiful condition.

8057.—54-foot. Teak finish throughout. Stateroom. Saloon. Speed 10½ miles. Cost $10,000. Bargain.

7622.—53x11x3½. Lawley Coast Cruiser. Double stateroom, saloon; 50 h. p. "20th Century" engine.

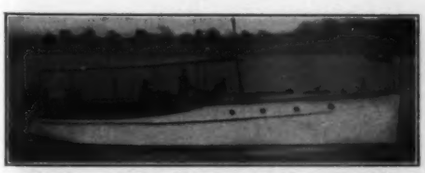
8147.—50x9.2x2.10. Twin Screw Express Cruiser. Cabin berths 2; two 60 h.p. Van Blerck motors; speed 15 knots.

8152.—50x11x3. Express Cruiser, built by Luders, 1914. Cabin sleeps four; 70 h. p. Sterling; speed 14½ miles.

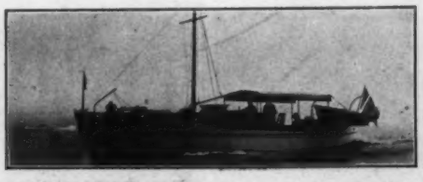


8182.—45x11x3.2. Launched 1914. Stateroom, saloon, two toilets. 24 h.p. "20th Century" motor.

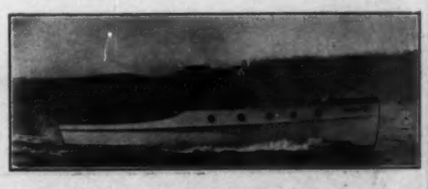
8159.—45½x11x3½. Stateroom, large saloon, two toilets. 20th Century motor.



8125.—45x10.7x3. Elco Cruiser. Launched 1914. Stateroom, saloon, two toilets. 25 h.p. Standard motor.



8065.—40x9.2x3.4. Launched 1912. Comfortable cabin. Unusually able sea boat.



7903.—40x9.2x3.4. Launched 1913. Stateroom, saloon. 45 h.p. Fay & Bowen engine. Speed, 12 miles.

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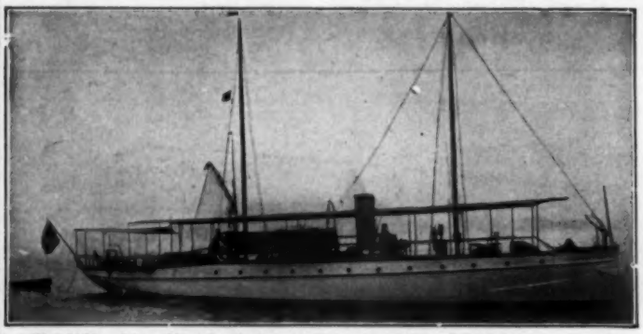
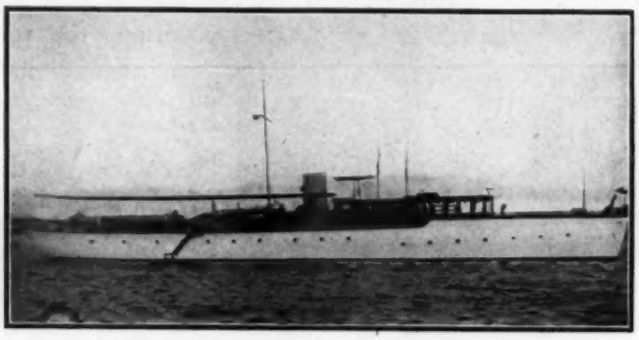
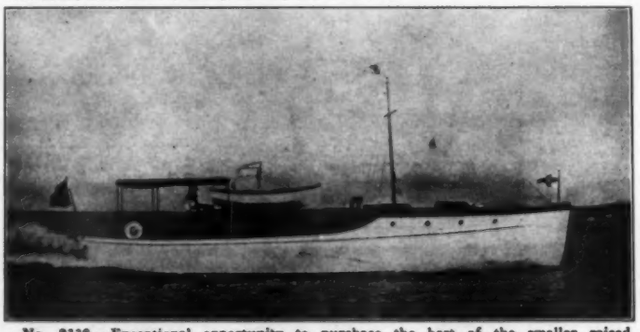


No. 8178.—Sale—Charter—85 ft. modern motor yacht. Excellent accommodations. Standard motor, speed 12 miles. Electric lighted. Large deck space.

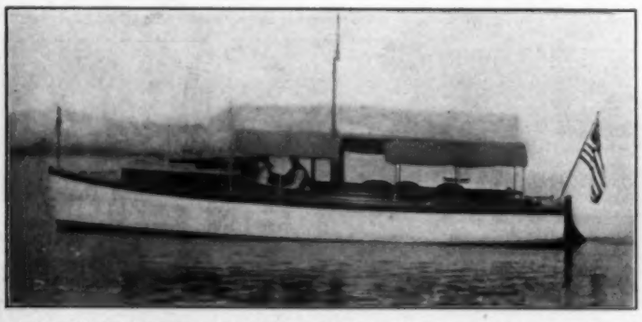


No. 7999.—Sale—Charter—118 ft. fast twin-screw gasoline cruiser; three double staterooms, main saloon, dining saloon; two bathrooms.

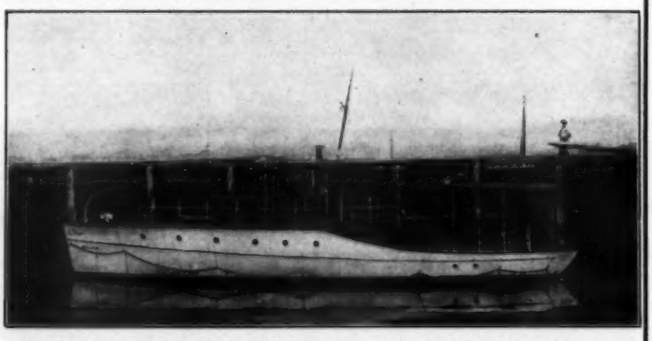
No. 7058.—Sale—Charter—98-foot twin-screw cruiser; 2-125 H.P. Standard motors, speed 15 miles. Four staterooms, dining saloon, two bathrooms, four W. Cs. Electric lighted.



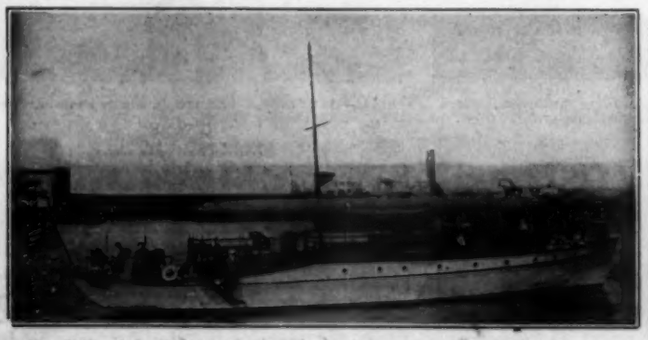
No. 8338.—Exceptional opportunity to purchase the best of the smaller raised deck cruisers available—43 ft. x 10 ft. x 3 ft. 8 in. draft. 40 H.P. Blount Motor new 1914. Speed 10 miles. Lighted by electricity. Stateroom with two berths and saloon 2 transom berths. Has toilet room, good galley and engine room. Abundance of locker room. Is a comfortable cruiser and of good sea-going qualities.



No. 8045.—Desirable Day Cruiser—Sterling Motor—Speed, 12 miles. Large cockpit, saloon and toilet room. Price attractive.



No. 8010.—For Sale.—56 ft. Raised Deck Cruiser, especially designed for ocean service. Built in 1910 by Seabury. Two staterooms for owner; four berths for owner's party. Mahogany interior finish. Acetylene lighting plant. Searchlight. Completely equipped galley. 12 ft. power dinghy. 40 H.P. Standard motor, 4 cycle, 6 cylinders. One man control, Bosch magneto. Maximum speed, 10.79 M.P.H. Equipment perfect. Overhauled annually.



No. 7674.—Sale—Charter—Twin-screw gasoline cruiser, 75 ft. by 17 ft. 6 inch beam. One double and one single stateroom, bathroom, large saloon, 20th Century motors.

No. 1860.—For Charter—Houseboat, 70 ft. by 18 ft. 6 in. by 18 in. draft; three staterooms, two bathrooms, dining saloon and deck house.

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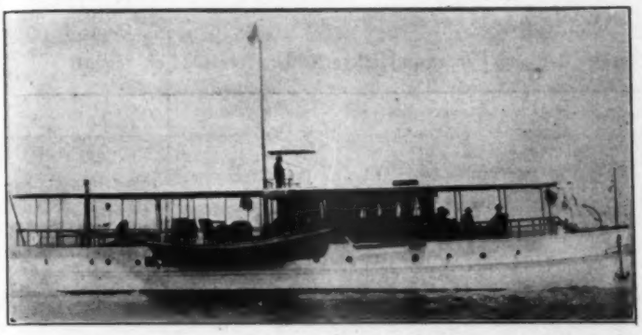
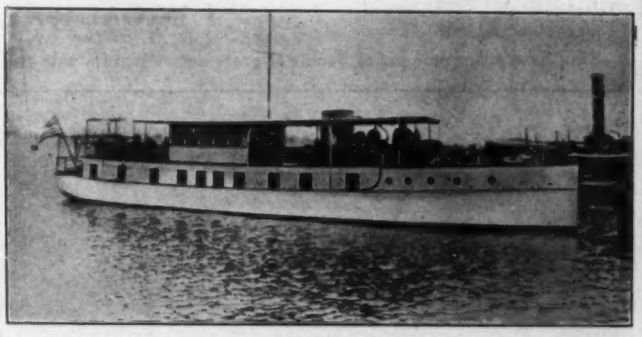
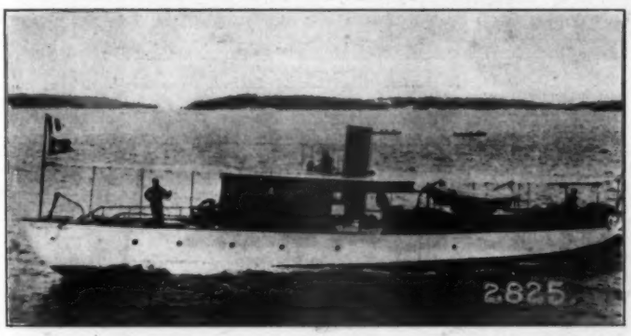


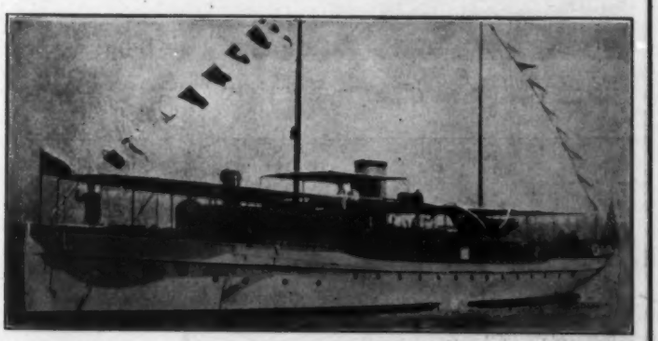
No. 1756.—For Sale or Charter.—Twin screw, semi-houseboat, 76 x 19.4 x 3 feet draft. Twentieth Century motors. 5 staterooms. Unusually large deck house. Excellent toilet accommodations. Electric lights. Economical to operate.



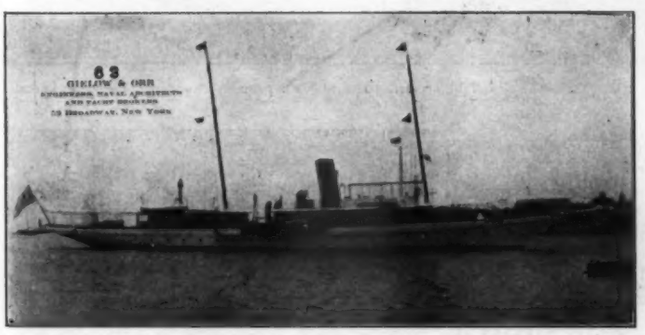
No. 4266.—For Sale or Charter.—High class 95-foot twin screw, semi-houseboat. Unusual accommodations. Speed up to 14 miles. Every convenience.



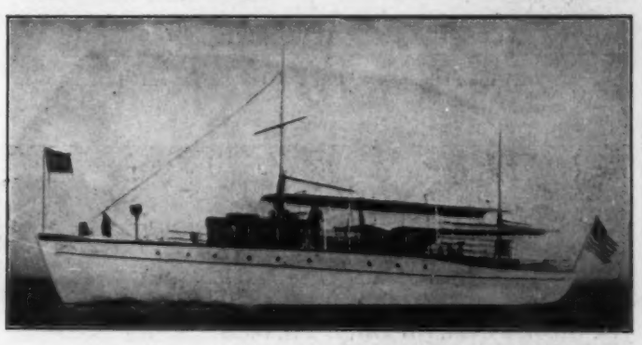
No. 2825.—Unusual Bargain.—85-foot high class steam yacht, speed up to 15 miles. Triple expansion engine. Water tube boiler. Has always had excellent care, subject to close inspection.



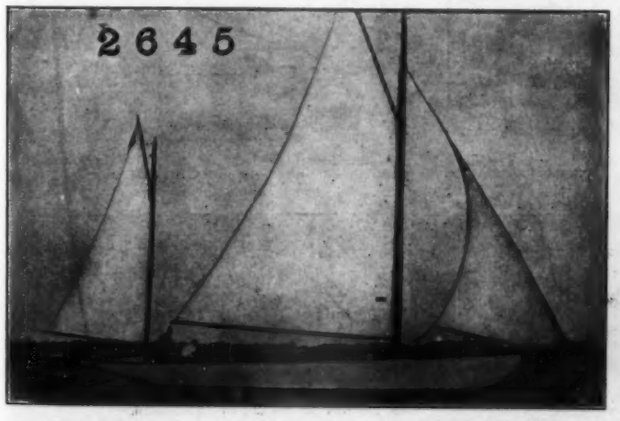
No. 4717.—For Sale.—Very attractive high class 98-foot twin screw motor yacht, 17 feet 2 inches beam, 5 feet 6 inches draft. Speed up to 16 miles. 3 staterooms. 2 bathrooms. Deck dining saloon.



No. 63.—For Sale.—Low Price.—155-foot single screw steel steam yacht. 6 staterooms. 32 deck houses. Speed up to 18 miles. Consider charter for next season.



No. 5142.—For Sale.—75-foot twin screw seagoing motor yacht. 2 double staterooms. Large main cabin. Bathroom. Standard motors. Electric lights. Excellent condition.



No. 2645.—For Sale.—Low Price.—Centerboard auxiliary yawl, 55 x 38 x 15 x 3 feet draft. Saloon 13 feet long. Single stateroom. Headroom 6 feet 2 inches. New Ralaco engine, 1914.

No. 4076.—For Sale.—Auxiliary keel schooner, 135 x 107 x 26.6 x 14 feet draft. Extra large accommodations. Pacific coast delivery. Now in commission.

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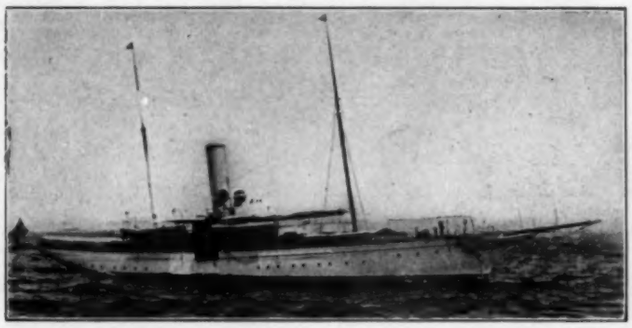
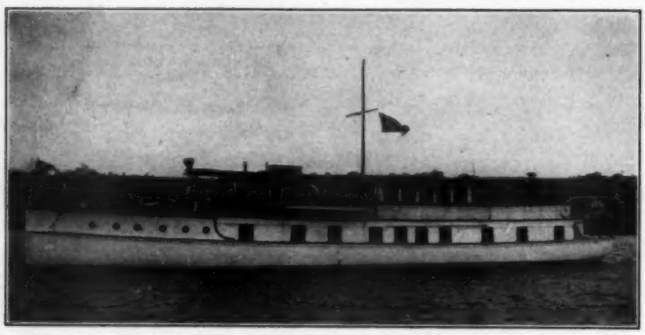


No. 246.—Sale—Charter—Ocean going, 200 ft. Steam Yacht. Comfortable accommodations. Classed 100-A-1 Lloyds.



No. 1872.—For Florida charter.—High-class 95 ft. twin screw semi-houseboat; unusual accommodations.

No. 2065.—Handsome, twin screw cruiser, 85 x 14, equipped with first class motor, speed 12 miles.

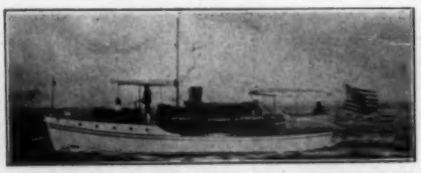
No. 1227.—Lawley built cruiser, 90 x 14.6 six cylinder Standard; speed 12 knots.

No. 1513.—Able cruiser, twin screw, 75 x 14, two 50 H.P. motors, speed 11 knots.

No. 1401.—Raised Deck Cruiser, 60 x 12, six cyl. Standard motor, sleeps six people.

No. 1866.—Modern cruiser, 70 x 12.4 built 1912, two Twentieth Century motors, speed 13 miles. Best condition.

No. 1996.—Raised Deck Cruiser, with deck house, 45.6 x 11; 20th Century motor.

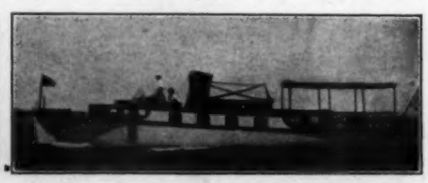


No. 1890.—Modern cruiser, 49 x 12, new Standard motor, speed 10 miles.

No. 2055.—Bridge deck, 58 x 11.4 x 3.6, fifty H.P. Twentieth Century motor installed 1914, speed 12 miles.

No. 1782.—Fast Bridge Deck Cruiser, 56 x 9.6, new 6 cyl. 100 H.P. Murray & Tregurtha motor.

No. 1515.—Exceptional seaworthy cruiser, 66 x 13.6 Sterling 8 cyl. engine. Speed 14 miles.



No. 1396.—Cruiser, 54 x 11. Twenty Century motor with controls on deck. In commission.

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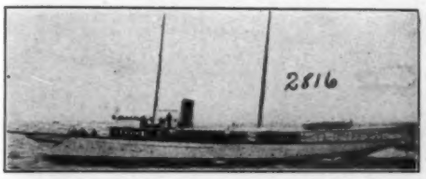
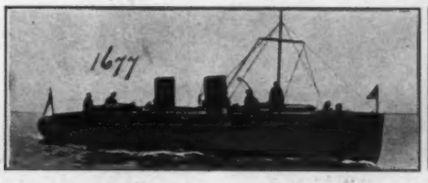
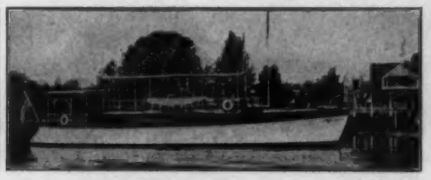


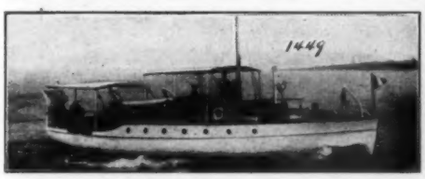
No. 2816.—145-foot steel steam yacht, located California. Owner's quarters consist of five staterooms, dining saloon, social hall, lower saloon. Two bathrooms, mahogany finished. Electric lights. Triple Expansion Engine. Two Water Tube Boilers. Speed 15-17 miles. Fully equipped. Price attractive.



No. 1677.—57-foot cruiser. Stateroom and large saloon, sleep five people. Speed 13 miles.

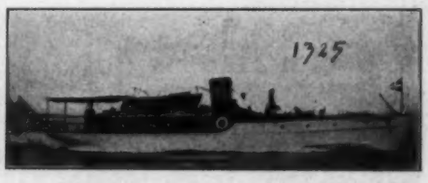


No. 1006.—57-foot cruiser. Two staterooms large saloon with four berths. Speed 11-13 miles.

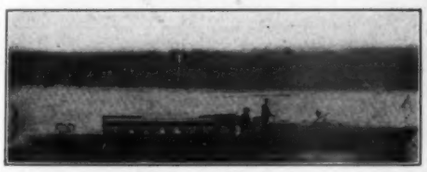


No. 1449.—56-foot cruiser. Stateroom, saloon, etc. Speed 11 miles.

No. 1359.—56-foot cruiser. Stateroom, saloon, etc. Speed 11-12 miles.

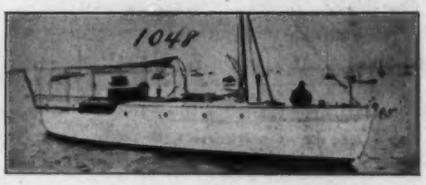


No. 1325.—55-foot cruiser. Stateroom, saloon, etc. Speed 16-18 miles.

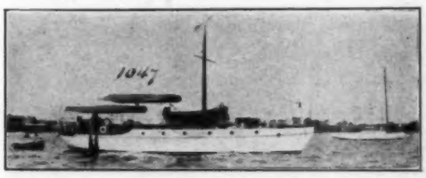


No. 821.—55-foot cruiser. Large saloon with four berths. Speed 13-15 miles.

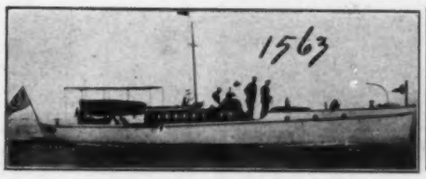
No. 1366.—Twin screw 55-foot cruiser. Stateroom, saloon, bathroom, etc. Speed 12 miles.



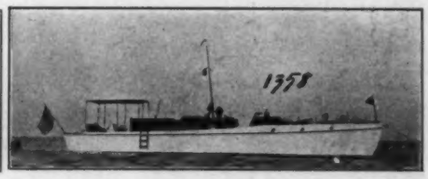
No. 1048.—57-foot cruiser. Stateroom, saloon, etc. Speed 12 miles.



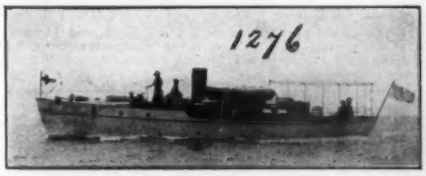
No. 1047.—55-foot cruiser. Two staterooms, saloon, etc. Speed 11-12 miles.



No. 1563.—52-foot cruiser. Large saloon with three extension berths, etc. Speed 15 miles.



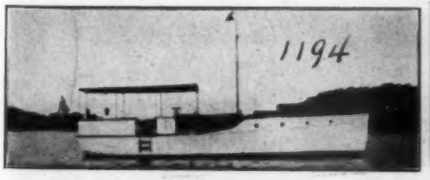
No. 1358.—52-foot cruiser. Stateroom, saloon, etc. Speed 14-16 miles.



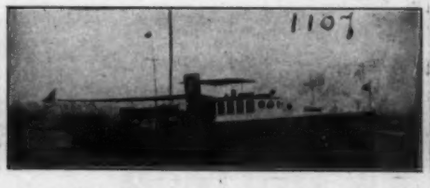
No. 1276.—50-foot cruiser. Stateroom, saloon, etc. Speed 12 miles.

No. 1670.—45-foot cruiser. Stateroom, saloon, etc. Speed 15 knots.

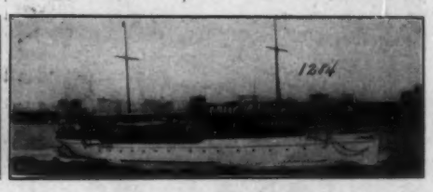
No. 1459.—50-foot cruiser. Stateroom, saloon, etc. Speed 10 miles.



No. 1194.—40-foot cruiser. Stateroom, saloon, etc. Speed 10 miles.



No. 1107.—90-foot cruiser. Three staterooms, 2 bathrooms, etc. Speed 12-14 miles.



No. 1284.—Twin screw 98-foot power yacht. Four staterooms, two bathrooms, etc. Speed 14-16 miles.

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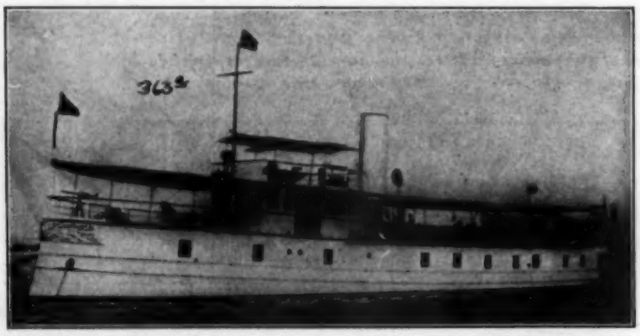
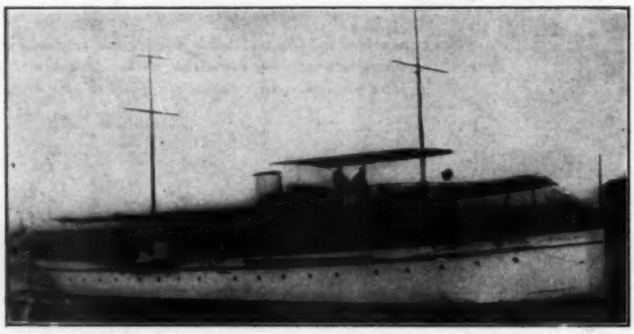
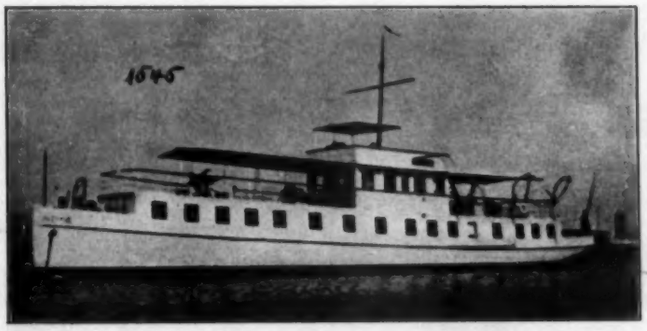


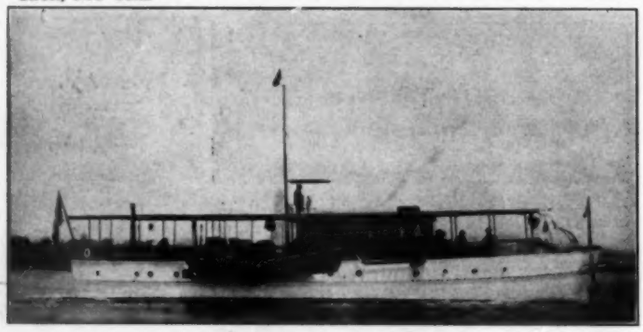
No. 363.—Most attractive houseboat of large size; luxuriously furnished; all conveniences; must be seen to be appreciated. Cox & Stevens, 15 William Street, New York.



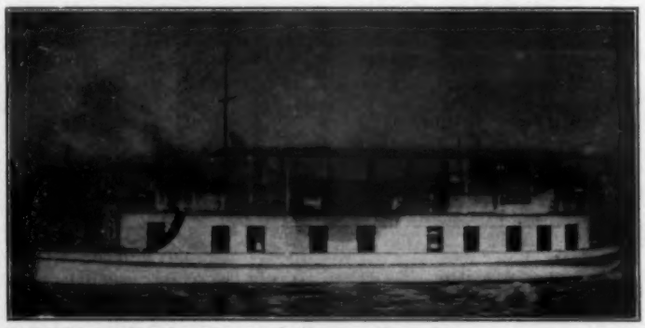
No. 1796.—For Sale or Charter.—Very roomy, twin screw cruising power yacht; 99 x 17 x 4 ft. Recent build. Speed 13-15 miles; Standard motors. Large dining saloon, six staterooms, three bathrooms; all conveniences. Cox & Stevens, 15 William Street, New York.



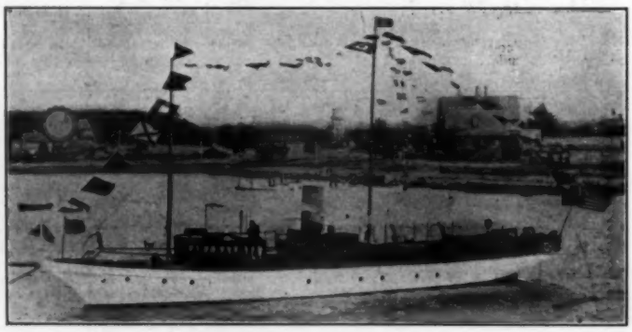
No. 1545.—For Charter or Sale.—110 ft. twin screw gasoline houseboat. Speed 11 miles. Large accommodations include main saloon, saloon, four staterooms, bath, three toilets, etc. Cox & Stevens, 15 William Street, New York.



No. 3067.—For Charter or Sale.—75 ft. twin screw gasoline houseboat; tunnel stern. Speed 10-11 miles. Large dining saloon on deck; four staterooms. Price attractive. Cox & Stevens, 15 William St., New York.

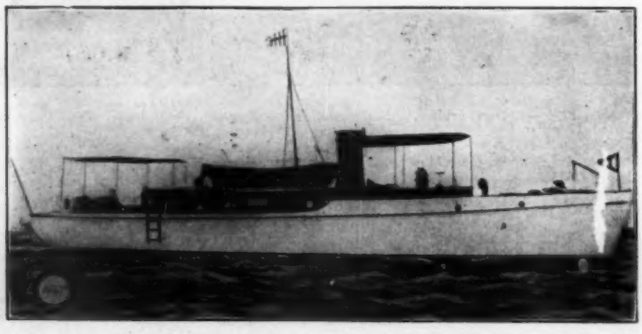


No. 1246.—70-foot gasoline houseboat, suitable for very shoal waters; large main saloon, three double staterooms, bath, etc.; all conveniences. Cox & Stevens, 15 William Street, New York.



No. 573.—For Sale.—Twin screw power yacht, 90 x 14.5 x 3.2 ft. Speed 11 miles. Large accommodations include dining and main saloon, three staterooms, bath, two toilets, etc. Very economical to operate. Adapted for Florida waters. Cox & Stevens, 15 William St., New York.

No. 1296.—Attractive 75 ft. twin screw power yacht. Speed 12-13 miles. Dining saloon forward; three staterooms, bath, etc., aft. All conveniences. Cox & Stevens, 15 William Street, New York.



No. 1467.—For Sale.—Lawley built bridge deck cruiser, 52 x 11 x 3.6 ft.; speed, 12 miles; best craft of type and size available; now in commission in Florida; price attractive. Cox & Stevens, 15 William Street, New York.

THE MoToR BOATinG MARKET PLACE

Opportunities for the Motor Boatman

The rate for "For Sale" and "Want" advertisements is 3 cents per word. If an illustration is used the charge is as follows, which includes the making of the cut:
Cut one inch deep, one column wide..... $2
Cut 1½ inches deep, 1½ columns wide..... $5
Cut three inches deep, three columns wide..... $15

Before you buy or before you sell examine the exceptional buying and selling opportunities under this heading. They comprise the best offers of the month. Please mention MoToR BoatinG.

WANTED—A 12-14 H.P. four-cycle engine, without reverse gear, carburetor or magneto; must be a bargain. W. A. Stoecks, 723 Main St., Davenport, Iowa.

BARGAIN—17 H.P., 3-CYLINDER, JUMP SPARK, 2-CYCLE KNOX ENGINE, PARAGON GEAR, CARBURETOR, THOROUGHLY OVERHAULED AND IN PERFECT CONDITION, $200. ADDRESS CAMDEN ANCHOR-ROCKLAND MCH. CO., CAMDEN, ME., OR B. C. BIXBY, NEWTON CENTRE, MASS.

One five-speed Caille motor, dual ignition. Never been out of crate. Will send for $70. Edith L. Amick, 29 Portland Pier, Portland, Me.

For Sale Cheap—26 foot, glass cabin; boat one year old, with or without engine; also one 2-cyl. 4-cycle, 12 H. P. engine complete. G. C. Losey, 1010 Cass Ave., Grand Rapids, Mich.

DRAUGHTSMAN WANTED—Man who has had experience in making sketches and complete plans of vessels. Preferably one who has some knowledge of motor boat practice and graduate of some technical school. Opportunity, care of MoToR BoatinG.

WANTED—50 to 60 ft. raised or bridge deck cruiser; must have good make of engine and be in first class shape. State all particulars and lowest cash price in first letter. J. M. Hayden, 230 Avon St., Norfolk, Va.

WANTED—3 or 4 cylinder high speed racing engine, 25 to 40 horsepower. Pierce Budd, Erd, Red Wing or some extra good engine in perfect condition. G. F. Stone, 49 Kent St., Haverhill, Mass.

FOR SALE—Raised Deck V Bottom Cruiser, complete in every particular; speed, eighteen miles; length, thirty-two feet; beam, eight feet; draft, two feet ten; six-cylinder Van Blerck motor; new nineteen fifteen electric lights; first class condition; price, low; located Southern waters. Address Cruiser, care of MoToR BoatinG, 119 West 40th St., New York.

HEART OF THE EVERGLADES.
Charter one of our 12" draft modern house-boats and penetrate just a little farther than the other fellow ever has been. House-boats for cruising all over Florida. Deer and turkey guides furnished with vessels.
McCOY BROS., Daytona, Florida.

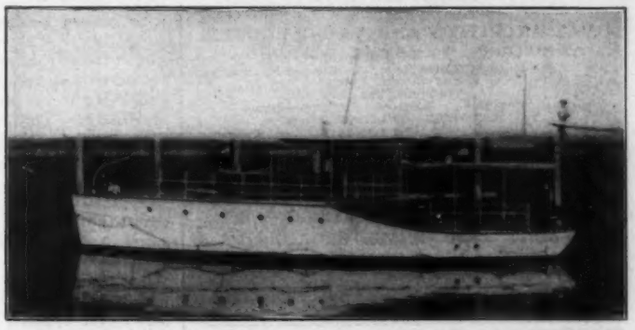
FOR SALE—Mietz & Weiss, Kerosene Marine Engine, 3 cylinders, 22 H.P. guaranteed in perfect condition. Price $400. A. MacInnes, 85 Cortlandt St., New York.

RICE STOCK MOTOR BOATS.
16-foot speed boats; 19-foot runabouts; 22-foot auto boats. State type interested in. Catalogue on request.
RICE BROTHERS COMPANY, East Boothbay, Maine.

CANADIANS, Second-hand engine bargains. Send for list.
GUARANTEE MOTOR COMPANY
73 Bay Street, North Hamilton, Ont., Canada.

No. 7181.—For sale by an estate high class gasoline cruiser of the best design and build; dimensions—length, 53½ ft.; beam, 11½ ft.; draft, 3½ ft.; 6 cylinder Standard motor. Accommodations include two double staterooms; saloon, etc.

FRANK BOWNE JONES, AGENT,
29 BROADWAY,
NEW YORK

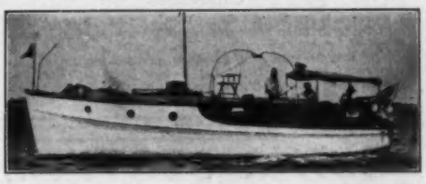


FOR SALE—This splendid new Day Cruiser Hull, 36 x 7½ ft., mahogany finish; toilet and galley, designed for 60 to 100 H.P. Second-hand boats for sale or charter. Building, Repairs, Storage under cover. Power Marine Ways—75 ft. cradle. FLORIDA BOAT WORKS, West Palm Beach, Fla.

FOR SALE—First class boat line, including launches, sail boats, rowboats, docks and landings, invoicing about $18,000; reason for selling, owners have too much other business. This is a good proposition for the right parties. Address Geo. P. Petersen, Clear Lake, Iowa.

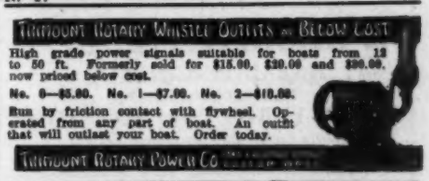
FOR SALE—$2,700, 53-ft. 16-20 m. new $6,000 Power Yacht, $900.00 cash. Also new 18-mile cruiser, $475.00. Nine passenger mahogany launch, $39.00. Modern Yacht Co., Bath, Me.

One 2-cyl. 12 H.P. Gray Motor, with Gies reverse gear in good condition with complete engine equipment for $75.00. U. J. McCANN, St. James, Mich.



Power Cruiser. 36 x 9, built 1911; 20 h.p. motor; speed nine miles; large cabin; double stateroom; toilet, galley; electric lights. Mahogany finish; complete cruising equipment; tender. Exceptional condition throughout. John G. Alden, 131 State St., Boston, Mass.

FOR SALE—27 ft. cruiser, brand new, latest style Price $600 for quick sale. James Wilde, Pearl River, N. Y.


TRIUMPH ROTARY WHISTLE OUTFITS AT BELOW COST
High grade power signals suitable for boats from 12 to 50 ft. Formerly sold for $15.00, $20.00 and $30.00. now priced below cost.
No. 0—$5.00. No. 1—$7.00. No. 2—$10.00.
Run by friction contact with flywheel. Operated from any part of boat. An outfit that will outlast your boat. Order today.
TRIUMPH ROTARY POWER CO.

USE "SNAPPER" ENGINES for your small boat. They are a big little engine built by The Automatic Machine Co., Bridgeport, Conn.

FEBRUARY MOTOR BOATING

—WILL BE THE—

ANNUAL NEW YORK SHOW NUMBER

Covering the big National Motor Boat Show in New York City which is held January 29th to February 6th.

Complete data on the show will be given, including all exhibits.

Use big space in the February issue and let your publicity help you cash in on the enthusiasm and buying interest of the show season.

Forms Close January 10th

Send your copy as early as possible, please

MOTOR BOATING

119 WEST 40th STREET, NEW YORK CITY

NAVAL ARCHITECTS & YACHT BROKERS

ARTHUR BINNEY
Successor to EDWARD BURGESS
NAVAL ARCHITECT AND YACHT BROKER
MASON BUILDING, 70 KILBY ST., BOSTON, MASS.
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Designer of Sail and Motor Boats
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EAST GREENWICH RHODE ISLAND

HARRY W. SANFORD
YACHT BROKER
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J. MURRAY WATTS
Naval Architects and Engineers, Yacht and Vessel Brokers
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220 CHESTNUT STREET PHILADELPHIA

IF
YOU WANT A BOAT DESIGNED, BACKED BY EXPERIENCE, WRITE
MORRIS M. WHITAKER, N. A.
207 HIGHMOUNT AVENUE :: NYACK, N. Y.

Installing a Canvas Berth

(*Continued from page 23*)

tomed to it. Anyhow the board at the front is not high enough to keep the blankets from falling off, and several cold nights I have found them mostly on the cabin floor.

The way I purpose to remedy this, and get a more comfortable berth, is to construct a frame something on the order of a pipe berth with canvas bottom, and swing this several inches above the transoms. It will be necessary to put this together so that it can be folded or knocked down, as the cabin is small and there is no place for stowing a regular pipe berth.

The sketch will show how I intend to construct this. The frame is of hard wood with soft steel straps, riveted to the ends of the side bars. These are to hold the end pieces and to provide a means of tightening the canvas. This is made with a wide hem around the edges into which the frame pieces slide loosely. To fold up it is only necessary to loosen the tightening screws, pull out the pins in the opposite corners and draw out the end bars. The whole thing is then rolled up into a small package which may be easily stowed.

C. H. CHRISTIE,
Saginaw, Mich.

An Automatic Governor

THE main change in the equipment of my boat which I am to make this year, is the installation of an automatic governor. Some of my friends are not quick enough to open the throttle when putting in the clutch, and often stall the motor, or let it run away when they withdraw the clutch. The governor, shown in the sketch (page 23), will do away with all this, and render my boat more "fool proof"—if my friends will pardon the liberty.

The main portion of the governor, the cylinder and piston, are an old bicycle pump, about seven inches long and one inch in diameter. It is held to the bulkhead by a bracket, as shown. Two copper tubes are let into it and soldered, one at each end. The one at the base leads to the discharge of the circulating pump, where it enters the water jacket, or it may be connected to the drain cock. The other tube is simply to drain leakage overboard. A spring is enclosed in the pump to return the piston to the "in" position. This should not be very strong, as the water pressure is never very great. The drawing will explain its installation.

The operation is as follows: If the engine speeds up above the normal speed, the extra water pressure in the cooling system acting on the pump piston forces it out, and closes the throttle. The throttle may also be operated by the hand lever to any required running speed. Thus the governor interferes in no way with the operation of the motor at will, but keeps it from speeding up too far. As may also be seen it prevents it from stalling when it is running idle by opening the throttle wide whenever the motor slows up, due to any cause at all. It does not draw water from the cooling system with the exception of leakage past the piston, which would, of course, be negligible.

Other changes which we intend to make are of little general interest, being simply those which apply to my particular boat. I am widening the seats and giving them a rake aft of about five to eight degrees, which, with lazy-backs, will add to the comfort of the passengers. I am getting two wicker chairs and a good auto top with spray curtains and I am repainting my boat a dark navy gray and refinishing the decks and coaming in mahogany color stain. I am putting two springs, such as are used in the "sag in the middle" kind of bed-spring in my steering line to prevent weather troubles. A friend of mine has used these instead of turn buckles with a good deal of satisfaction.

W. P. MUIR,
Westmount, Quebec.

WE build Cruisers, House boats, Work boats, Fast Passenger boats, Fishing boats, Hydroplanes, Row boats, Shoal boats. Planked Hulls and K. D. Boat Frames.
Motor Boat & Auto Supply Mfg. Co.
311 Main St. Cincinnati, Ohio

The "Dandy" Reverse Gear
During the last two seasons this gear has shown itself able to withstand the hardest kind of service.
Working parts run in a bath of oil. Clutch is the multiple disc type.
Material and workmanship best money can buy.
Write for catalog and prices.
THE BROWN CLUTCH COMPANY
SANDUSKY, OHIO

Up-to-Date Motor Boat Lighting
Complete Outfits at a Price You Can Afford to Pay
Write us requesting information about our Ball Bearing Battery Chargers with Automatic Cut Out and Complete Outfits. We are the manufacturers of the well-known Comet Magneto.
HENRICKS MAGNETO & ELECTRIC CO.
1255 ST. PAUL STREET INDIANAPOLIS, IND
Eastern Office—136 Liberty Street, New York

NORTHWESTERN TWO-CYCLE MOTORS
18 H. P. with Complete Electrical Equipment $250
Row Boat Motor, $50. 10 H.P., $150. 2 H.P., $50. 4 H.P., $75. 7 H.P., $100.
Sold on 30 Days' Free Trial. Write for Catalog.
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Help your Dealers by Advertising

Up-to-date manufacturers do not consider their product sold when it has only reached the dealer. They follow it through until it is in the hands of the consumer.

Motor Boating is the most tangible dealer aid known. All the best dealers read it regularly, and they see what is being done for them in the way of advertising by the manufacturers they represent. Their appreciation is shown by increased loyalty for the manufacturer and enthusiasm for the product.

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119 W. 40th St., New York

$100. in Prizes
for practical letters about

VALENTINE'S VALSPAR
The Varnish That Won't Turn White

First Prize $50.00 **Third Prize $15.00**
Second Prize $25.00 **Fourth Prize $10.00**

YOU boat owners, captains, sailors, also marine architects, builders and shipyard men—you know a lot about Valspar in its actual use on your boats. You tell each other and give each other practical advice about Valspar, but you don't often tell us.

We want to know what you yachtsmen are saying about Valspar, why you like it or don't like it, and most of all, why you keep on *using* it. We believe you do keep on because our steadily growing sales seem to prove that to be so.

Accordingly we invite you to send us a letter, stating your experience with Valspar, accompanied by a photograph of the boat on which you had that experience.

Prizes, as noted above, will be awarded to the four persons sending in the letters, preferably with photo, which the judges consider most useful to our manufacturing and advertising departments from the standpoint of helpful facts and practical information.

Don't try to be especially flattering or flowery—simply write us a personal letter, well packed with good, solid, frank truths gathered from your own experiences.

The following prominent gentlemen have agreed to serve as judges: Messrs. J. Stuart Blackton, Commodore of Atlantic Yacht Club, Grantland Rice, Sporting Editor, N. Y. Tribune, and A. W. Erickson, President, The Erickson Co., Inc., all of New York. An impartial and just distribution of the prizes is thus assured all contestants.

Rules of the Boating Prize Letter Contest

1. It costs you nothing to enter this contest.
2. Only persons are eligible who have had practical experience with Valspar prior to December 1, 1915.
3. Literary style, spelling and writing don't matter.
4. Write on only one side of the paper.
5. Sign your name and give a permanent address where the notice of prize awards will surely reach you in March.
6. Photographs sent in with your letter will secure special credit for you. They must be mailed in the same enclosure, not separately, with the understanding that we may keep them.
7. Contest closes February 15, 1916. Prizes will be awarded in March and all contestants will receive notice of results as soon as possible.
8. Address your letter like this:—

Valentine & Company,
456 Fourth Avenue,
New York, N. Y.

For Boating Prize Letter Contest.

Send your letter right away—if you put it off you may lose this opportunity to win $50.00.

Send coupon immediately to register your name in the contest. Story and photograph may follow.

VALENTINE & COMPANY, 456 FOURTH AVE., NEW YORK

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VALENTINE & COMPANY, 456 Fourth Avenue, New York.
Please enter my name in the Boating Prize Letter Contest.
My letter and photo of boat will follow. (M.B.)
Name .....
Address .....

IMPROVED THERMEX SILENCER

Increases Revolutions, No Back Pressure!

Cannot clog, nor collect salt; water cannot flow back to cylinder. No heating, no odor. Used free or under water — adjustable discharge. Lightest, cheapest to install. Free booklet shows why.

Send for it to-day.

THERMEX SILENCER WORKS, 10 Lewis Street, East Boston.

Bruce, Stewart & Co., Charlottetown, P. E. I.; Marine Engine & Supply Co., Los Angeles, Cal.; S. V. B. Miller, Seattle, Wash.; Burrard Iron Works, Vancouver, B. C.

Small 4-Cylinder Motors, 2¾ x4 in., 18 H.P.
Regular $100.00 motors at $65.00
Splitdorf Magnetos, new, at..... 10.00
$1.00 Spark Plugs, while they last, 20c ea.
Other bargains in motors and all kinds of automobile accessories.

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Supreme among all makes of marine motors for their high speed, light weight and great power. For both high speed and medium duty service.

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MARINITE

Is particularly recommended where quick drying qualities are a first consideration. Dries dust free in three to five hours.

Will not turn white under water.

EDWARD SMITH & COMPANY
Varnish Makers for 89 Years.
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Wharf No. 81 Bay City, Mich.
Designers and Builders of Boats for Pleasure, Speed and Commercial Purposes.
COMPLETE OR IN THE KNOCK-DOWN
A Large Line V Bottoms
WRITE FOR CATALOG

MILLER
1915 Porcelain Spark Plug
"GUARANTEED"
(Pat'd Oct. 13, 1908.)
Only the finest quality of material is used. Made in Standard Sizes.
Delivered to any part of the World by Parcel Post.
PRICE, 50 CENTS EACH
SPECIAL PRICE to Manufacturers, Jobbers, Dealers and Agents.
AGENTS WANTED
In Unoccupied Territory.
1915 Annual Catalogue Mailed Free.
CHAS. E. MILLER
The largest Auto Supply House in America.
Home Office, 97-103 Reade St., New York.
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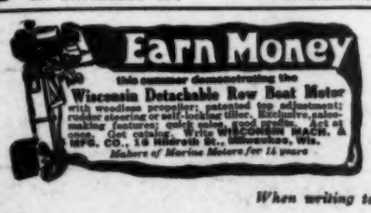
Motor Satisfaction
Comes to every user of Watkins Special Motors. Especially fine for canoes and light boats.
2 H. P., Single Cylinder ..... 25 lbs.
6 H. P., Double Cylinder ..... 55 lbs.
8 H. P., Four Cylinder ..... 140 lbs.
Aluminum base, copper water-jackets, steel shaft, bronze bearings.
The Watkins Motor Co.
894 SAYMILLER ST., CINCINNATI, O.


Earn Money
this summer demonstrating the
Wisconsin Detachable Row Boat Motor
with woodless propeller; patented top adjustment; rudder steering or self-locking tiller. Exclusive, salesmaking features; quick sales, good profits. Act at once. Get catalog. Write WISCONSIN MACH. & MFG. CO., 16 Hildreth St., Milwaukee, Wis.
Makers of Marine Motors for 14 years

Fitting a 24-Footer

(*Continued from page* 25)

curved so as to keep the coaming the same width by means of the compass if I had not preferred it straight. The piece was removed and ripped out, according to the markings, and then replaced in the same position, and screwed fast at the sides with flat-head brass screws into the filler blocks, and into the deck beam in front.

The other side pieces were now clamped into place, after making a good joint in front, and notching out in the after part to fit over the deck as shown. These pieces were wider than necessary, so that they could be marked out to the proper curve of the deck, by means of the compass as shown. The top edge was then ripped off, and the lower edge marked out parallel to it. These were fastened with flat-head screws to every filler block, the screws being staggered. The entire top edge of the sides and front was now smoothed down and rounded off, and the butt plates previously mentioned were fitted.

The back piece was now fitted across, a little higher than the other coaming to form a back-rest. By means of beveled blocks fastened to the deck beam, the proper angle was given to this piece, and it was fastened to the deck beam, and into the ends through the side coaming.

This coaming is still very secure, and has given no trouble at all.

L. R. KELLEY,
Philadelphia, Pa.

Yard and Shop

(*Continued from page* 40)

This department will be in charge of John E. Emery and offers the services of a highly trained marine engineering force for consultation in engine installation, designs, sail plans, etc.

Little Gray Brother

What is described as a truly wonderful combination of merit and value has been developed by the Gray Motor Co., of Detroit, Mich., in its new Model D, Jr., four-cycle marine engine. This model is being built in both two and four cylinders, rating 5-6 and 10-12 h.p. respectively. Curves for the four-cylinder machine have been plotted which show a range of power from 8 h.p. at 700 r.p.m., 11.5 at 1,000, 15 at 1,300, up to 21 h.p. at 2,000 r.p.m. The two-cylinder motor weighs about 300 pounds and the four about 400 pounds, this of course including magneto and built-in reversing gear. These engines are furnished as complete unit plants, without any equipment whatever, or in any combination desired by the customer. They are not, as might be expected from the name, designed as exact duplicates of the famous Model D, but are built according to a new design which incorporates several special features. Lack of space prevents further mention of these interesting motors, which, however, will be described more fully in a subsequent issue.

Fred Lord Designs New Motor

We have just been advised that Frederick K. Lord, N. A., has withdrawn from the Gasoline Engine Equipment Co. and has moved his designing office from Bayonne, N. J., to the Equitable Building, 120 Broadway, New York City, where he will specialize on all types of motor yachts. Of unusual interest just now is the announcement of the new Lord de Luxe motor, which Mr. Lord is putting on the market. This motor is of the four-cycle type, having four 4½ x 6-inch cylinders, developing 40 to 60 h.p., and designed especially for high class runabout service. The special features of this power plant include quality, enclosure of all moving parts, simplicity of design and construction and absence of piping.

Proposals for Motor Survey Cruiser

Sealed proposals for constructing and delivering a motor survey cruiser will be received at the U. S. Engineer Office, Chicago, Ill., until 10 a. m., January 12, 1916, and will then be opened. Information will be provided upon application to the above office.

New York Agent for Knox Products

We are informed that the Camden Anchor-Rockland Machine Co., of Camden, Me., has just concluded arrangements with Hall & Richards, of 544 West 163rd street, New York City, whereby the latter firm is to represent the former in this territory. Any one in the vicinity of New York wishing to purchase or obtain information concerning the various lines of Knox products—motors, carbureters and boats—should get in touch with Hall & Richards.

Trade Literature Received

One of the finest booklets which has come to our notice in many moons is "Boats," gotten out by the **Van Blerck Motor Co.**, of Monroe, Mich., for the purpose of displaying some of the more prominent boats in which Van Blerck motors have been recently installed. These boats are very beautifully illustrated and are briefly described in the captions under the pictures. They include some of the best runabouts, hydroplanes and cruisers which have been built during the past year.

We have received from **Sulzberger & Sons Co.**, of Chicago, Ill., a pamphlet having to do with Sulzberger's curled hair, which is used for upholstery purposes. This shows by text and attractive illustrations the many types of cushions and mattresses which may be constructed with Sulzberger's hair.

(*Continued on page* 54)

MULLINS BOATS
Designed by America's foremost naval architects and built in the largest boat factory in the world. If you ever expect to own a Motor Boat, send for Mullins big Boat Book. It's interesting—and free.
THE W. H. MULLINS COMPANY
510 Franklin St. Salem, Ohio

A LIBERAL ALLOWANCE ON YOUR OLD MOTOR
To apply on a new STERLING, WOLVERINE, PEERLESS, EAGLE or FERRO.
Send for our list of Rebuilt Engines.
UNGER & MAHON, Inc.
Pratt & Gay Sts. Baltimore, Md.

TOPPAN POWER DORIES AND MOTORS

Safe. Best Sea Boat Built $150 up. Send for Catalog.
KNOCK DOWN DORIES EASY TO BUILD.
Send for Free K. D. Circular and Prices.
TOPPAN BOAT MFG. CO., 21 Haverhill St., Boston, Mass

WICKER-KRAFT
Furniture for Yachts, Launches, Canoes
Wicker-Kraft Chairs, fitted with life belts, have won the approval of discriminating yachtsmen everywhere.
Write today for complete catalog.
WICKER-KRAFT COMPANY
31 South Water Street - - Newburgh, New York

Polarine
THE BEST OIL FOR ALL MOTORS
STANDARD OIL CO. of New York

SOMETHING NEW
"Dandy Jr." Power Tender.
10 ft. x 4 ft., semi-round, 2½ H. P. Rakish, cedar planked, $95.00.
9 ft. "Dandy" rowing tender, full round, mahogany trim, $75.00.
15 ft. "Special" for detachable motors, $60.
"Wisconsin" detachable rowboat motors, $50.00.
Flat bottom cedar dinghies, per ft., $2.00.
WATER CRAFT CO., 221 Fulton St., N. Y.

W & M REVERSING WHEELS
Guarantee Speed, Strength, Control. Catalog Free
Wilmarth & Morman Co.
1169 Monroe Ave., Grand Rapids, Mich

Francke Flexible Couplings
remove the friction load from your engine, eliminate vibration, and allow the shaft to turn freely.
At your dealer, or direct from
SMITH SERRELL CO., Inc.
Gen'l Sales Agent for THE FRANCKE CO.
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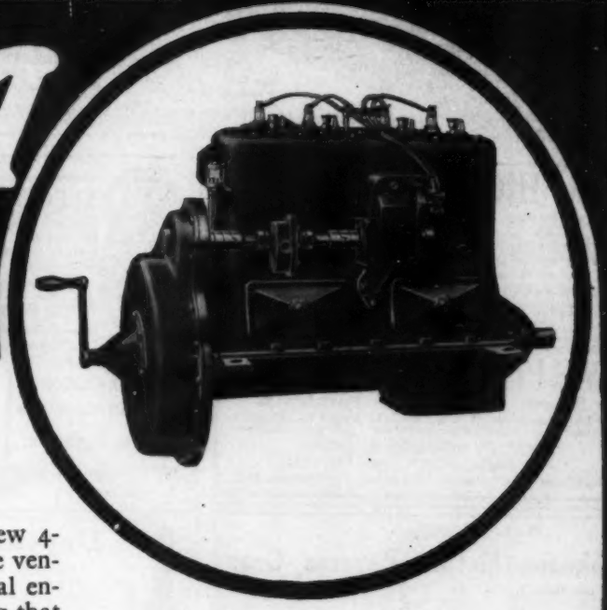
SUMTER **Magnetos**
Standard of the World for Low Tension
Sumter Electrical Co.
Factory: Sumter, S. C.
Service Stations in Principal Cities.

DIXIE **Magnetos**
Standard of the World for High Tension
General Sales Office: 1413 Michigan Ave., Chicago
Eastern Sales Office: 3, 5 & 7 W. 61st St., N. Y.

Put This L-A Engine in Your Boat for 30 Days Trial



New 14 H. P. 4-Cycle Model

Here is real news for the engine buyer—a new 4-cylinder, 4-cycle L-A motor. A motor which, we venture to say, will cause more interest and more real enthusiasm among motor boat owners than anything that has been brought out for the past two years.

The thought, care and extreme pains that were taken in designing this motor are evidenced in your first glance. Notice its sturdy, businesslike appearance—it is cleancut from propeller to flywheel.

Accessibility and cleanliness, which are such big considerations in the marine motor of today, are admirably taken care of. The cylinder head, as will be seen, is removable, and the large hand hole plates in the base are entirely unobstructed, giving quick and easy access to the working parts. The flywheels, gears and all other mechanisms being entirely enclosed, makes for an absolutely clean outfit and eliminates any possibility of grease being thrown about the boat.

Cylinders, 3¾ x 4½ inches. Jump spark ignition, using high tension magneto, single system. Rotary gear water pump. Splash and direct oiling circulation by plunger pump driven by cam.

This 14 h.p. is an engine that will give exceptional service in the wide variety of boats from 20 to 35 feet in length.

Our Liberal Sales Plan Makes Engine Buying Easy

You don't have to do any guess-work or run any risk whatever when you select an L-A engine for your boat.

Our liberal selling plan protects you fully and leaves the final decision up to your own good judgment. Select this smooth running, well-designed, perfectly balanced 14 h.p. engine or any model from our catalog, and put it in your boat for 30 days before making your final decision.

Our reason for making this most liberal offer is simple indeed. We want *you* to know L-A engines as well as we do—we want you to see for yourself how well they are designed—to see the material and workmanship that goes into their make-up and to form your own opinion as to whether or not L-A motors are economical, safe, powerful and dependable in actual every-day service.

Our 30-day trial plan does all this and more—it positively insures you satisfaction and permits you to know absolutely that you are getting the *most engine value possible* for the money.

Complete Line of 2-Cycle Models The line of 2-cycle L-A motors will be as complete in 1916 as ever before, comprising engines of 1 and 2-cylinder sizes, from 2½ to 12 h.p. Of special note is the new 8 h.p. 2-cylinder motor which has been redesigned along the same lines as the 2-cylinder 6 h.p. engine, which has met with such wonderful success during the last two years. These two particular models of 6 h.p. and 8 h.p. will again be the big leaders in 1916.

Send for the L-A Catalog today—get all the information possible, so that you won't be to the disadvantage of making a hap-hazard, last-minute decision.

Lockwood-Ash Motor Co.
1301 Horton Street Jackson, Mich.

Light weight, detachable, reversible; speeds up to 8 miles an hour or slow enough to troll; silent under muffler or under water exhaust; rudder steered; bronze underwater parts; battery equipped or flywheel magneto.

—or this L-A Rowboat Motor

"COLE" COURSE PROTRACTOR

Get acquainted with **M. C. Co.** nautical instruments. **"POLARIS"** Liquid Compasses in various sizes. **"PERFECT" Electric UNDERLIGHTED Compass**; costs less than a binnacle. New **"COLE" BEARING FINDER** fits any compass. **Brass and Mahogany Binnacles.** Send for interesting catalogues.

Box 45, MARINE COMPASS COMPANY, BRYANTVILLE, MASS.

FOR HIGH SPEED WORK

CURTISS FLYING BOATS, used everywhere; speed 60 to 80 miles per hour. Safest, most comfortable, fastest. CURTISS HYDROPLANES, 35-50 m. p. h., moderate cost. CURTISS MOTORS, 40 h. p. to 200 h. p., five models; used and accepted as best by six leading governments.

ILLUSTRATED LITERATURE FREE ON REQUEST.

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ELECTRIC SEARCHLIGHTS

We make searchlights in sizes from 7 in. to 60 in. diameter, suitable for small launches and yachts and for the largest battleships. Send for Catalog A.

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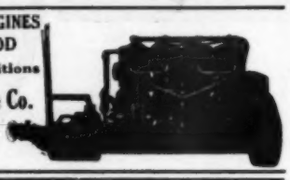
WHITE BOAT CEDAR

Mahogany, and all other Boat Woods

A large assortment of sizes. Lots to meet your particular requirements. Immediate quotations. Prompt shipment.

WM. P. YOUNGS & BROS.
First Avenue and 38th Street, New York.
Established over 50 years. Telephone 2710 Murray Hill.

ANDERSON ENGINES MAKE GOOD
Under all Conditions



Anderson Engine Co.
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CHICAGO

THE

Johnson Marine Reverse Gear

A complete line of ball bearing reverse gears from 1 to 50 H.P.
Write for Catalog.

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Manchester, Conn.

Dependable Fittings

Whistle outfits, Mufflers, Muffler Cut-outs, Filters, Fog bells, Stair locks, Combination flag pole and electric aft lights, Spark, throttle and reverse controls, etc.
Ask for Catalog B 5.

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"CARBO FLYER"

$385 A real hydroplane, 14 ft. 4 in. x 4 ft to H.P. 4 cylinder 4 cycle Universal Motor, high tension magneto, rear starter, reverse gear, salt water outfit.

Speed about 18 miles. Cedar planking, mahogany trim. brass fittings.

CARMAN & BOWES Bourse Building Philadelphia, Pa.

THE SMALL ARISTOCRAT

9-12 H.P., 4 Cyl., 4 Cycle.
With High Tension Magneto, Kingston Carburetor, Bronze Water Pump, Standard Reverse Gear, $150.00.
$160.00 with Rear Starter Attached.
9 H.P. at 1000. 10½ H.P. at 1200. 12 H.P. at 1400.
Motor can be run 300 r.p.m. or 3000.
Write for further information.

THE HERRMANN ENGINEERING CO.
Detroit, Michigan, U. S. A.

THE FINEST MOTOR BOATS

in the world are built by

Milwaukee Yacht & Boat Company

Designers and Builders of

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343-353 Becher Street, Milwaukee, Wis.

KRICE Carburetor 20% More Power — 30 DAYS TRIAL

We absolutely guarantee the Krice Carburetor to use less gasoline—give better control and 20% more power. Your money back if it doesn't. Write today for catalog.

Krice Carburetor Co. 1261 Oakland, Detroit, Mich.

DAVIS DINKS

First thing the yachtsman thinks of when he needs a tender is a "Davis Dink." Light, strong and serviceable. Both row and power in stock. Sizes 8 ft. to 16 ft. Our 9 ft. row weighs 65 lbs.

Send for Catalog.

The Davis Boat Works Co., Washington St., Sandusky, O.

Gordon Reversible Propeller

Quick reversing—perfect control. Means safety—reduced fuel consumption—less wear and tear on engine. Most practical for auxiliaries—blades feather fore and aft. Different size blades and weedless blades interchangeable. Cost more at first—less in the end.

Write for catalog and prices.

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MONARCH GAS ENGINE SPECIALTIES

Registered U. S. Patent Office

Monarch Carburetors, Check Valves, Auxiliary Air Valves, Pump Suction Connections and Strainers, etc., etc. Write for Catalogue.

MONARCH VALVE CO.
112 Front Street, Brooklyn, N. Y., U. S. A.
Member National Association of Boat and Engine Builders, Marine Supplies Association of America.

HOLMES-HOWARD MOTORS

Strictly high-grade, light-weight, unit power plants rated at 6 to 8 horsepower. Two-cycle, three-port type. Weight 125 lbs., including reverse gear, magneto and all equipment. Finest up-to-date design, construction and equipment

$160.00 Complete, including all equipment propeller, shaft and stuffing box.

Write for prices on 4 and 6 cylinder motors.

THE HOLMES-HOWARD MOTOR CO.
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MONARCH SPAR

Durable Marine Varnish
Has Stood the Test for Years

CHAS. H. GILLESPIE & SONS
Established 1824 JERSEY CITY, N. J.

TOPS CUSHIONS **MASTEN** SPRAY HOODS

Highest grade design, material and workmanship. Prices lowest for any products of equal quality. *Write for catalog.*

Theo. H. Masten Co.
123 West 52nd St., New York

Won't shake the boat

KOBAN ROWBOAT MOTOR
2 cylinders—more power—more speed—easy starter—no vibration
Write for booklet
Koban Mfg. Co. 246 S. Water St. Milwaukee, Wis.

3 H.P. Weedless Rudder

Something new in Motor Boat Tops and Equipment. Send at once for our New Catalogue, just out.

THE C. Z. KROM MFG. CO., TOLEDO, OHIO

Detachable Folding Seat

Prepaid to any part of the U. S. A. Special prices to the trade. Write for printed matter; 150-page catalog will be sent on receipt of 5 cents to cover mailing charges. Write now.

MODEL A Polished Brass Frame $3.50 MODEL B Black Enamel Iron Frame $2

THE MOTOR BOAT & SUPPLY CO.,
1405-1411 West Ninth St., Cleveland, Ohio

(Continued from page 52)

The Thomas School of Aviation, Inc., of Ithaca, N. Y., has sent us a booklet pertaining to Thomas motors and aeroplanes and the Thomas method of flying. This concern has been actively engaged recently in manufacturing aeroplanes for foreign governments, and the school for aeronauts has turned out many accomplished flyers during the past few months.

The Miller Gas & Vacuum Engine Co., of Chicago, Ill., has just published a new catalogue of Miller motors. This catalogue is attractively gotten up and gives, in addition to dimension plans and brief specifications, a photographic reproduction of each model bearing the Miller name.

Self Starter Possibilities

(Continued from page 11)

becomes a differential compound dynamo, charging the batteries at a predetermined rate which can be varied by a simple regulator adjustment. In operation, the current flows in the opposite direction in the series at a predetermined rate which can be varied by a simple regulator adjustment. In operation, the current flows in the opposite direction in the series field in charging from the direction in which it travels on starting. Thus, the action of this powerful field winding is to assist the motor when starting and to weaken the field strength of the dynamo on charging, automatically assisting the regulation of the charging current delivery to the batteries.

Bosch Flywheel Starter

The Bosch Magneto Co., of New York City, is manufacturing the Bosch flywheel starter (Rushmore system), which consists of but two units, namely, an electric motor and a switch. It is furnished to operate under any voltage desired, but the types most commonly used are those operating with 6 or 12-volt batteries. This starter engages a toothed rim on the engine flywheel by means of a pinion on the electric motor shaft, the toothed rim or gear ring being cut into or mounted outside or inside the periphery of the flywheel. The engagement of the Bosch flywheel starter is accomplished electrically, and the disengagement occurs automatically as soon as the engine begins to operate under its own power. In addition to this type of starting system, the Bosch company also manufactures a crankshaft starter, which engages the crankshaft either on its forward or after end. This system is intended for installation on motors where the flywheel is inaccessible.

Ward Leonard Automatic Controller

Although the Ward Leonard Electric Co., of Bronxville, N. Y., does not make complete electric lighting and starting systems, it supplies many manufacturers with its Ward Leonard automatic constant-ampere dynamo control. The internal construction of this controller is shown in the illustration on page 10. The circuit between the dynamos and the batteries is normally open, but when the voltage of the dynamo becomes proper for charging, the coil A on the magnet core B magnetizes the coil sufficiently to attract the arm C. This arm moves toward the core B, thus bringing the points $D D^1$ together, establishing the circuit between the battery and the dynamo. To prevent charging the battery at an excess rate, the strength of the dynamo field is made dependent on the touching of the two points $E E^1$. The coil F on the magnet core G carries the armature current and if this current reaches the neighborhood of 10 amperes, the core becomes sufficiently magnetized to attract the finger H, which separates the contacts $E E^1$, and a resistance M is inserted in the field circuit, weakening it and causing the amperes to decrease. The spring J pulls together the points $E E^1$ when the current decreases to a predetermined amount (say 9 amperes) and under operating conditions the finger H automatically and rapidly vibrates at such a rate as to keep it constant. In case the engine speed becomes so low that the dynamo volts are less than those of the battery, the magnetism caused by the coil A is weakened so that the spring K pulls the contacts $D D^1$ apart, thus preventing the current from flowing back from the battery. An auxiliary series coil L acts to insure the perfect demagnetization of the core B on reversal of the current.

Eveready Mechanical Starter

The Eveready starter is a mechanical device manufactured by the American Ever Ready Co., of Long Island City, N. Y., which is suitably placed in position at the forward end of a marine motor. Two powerful springs E are employed which are wound automatically and then held by brakeband F which, in conjunction with a release lever D is connected by a trip cable to a pedal placed near the steering wheel. On pressing the pedal with the foot, the brakeband is released, the springs unwind and the motor is revolved for six or eight revolutions at a rate of about 300 r.p.m., or sufficient to start it on the magneto. The motor is connected to the starter by an intermediate shaft and the universal couplings C. If for any reason the motor should fail to start, the springs in the starter may be rewound with very little effort by means of a detachable crank, which operates through a system of reducing gears. When the motor starts, however, the springs are rewound automatically during the first twenty-six revolutions, the rewinding mechanism disengaging when the springs are at proper tension.

"Perfect" Air Starter

This is a device manufactured by the Motor Compressor Co., of Newark, N. J., having four cylinders V-shaped, the two on one side being low pressure, and the two on the other side being high pressure. The "Perfect" air starter is a single unit acting as a powerful compound air motor or as an efficient two-stage compressor. Connection to the motor is with the crankshaft through a silent chain, as shown in the illustration on page 10, or the starter may be connected direct or through gears. To start the engine a large button on the control valve is pressed, releasing air in the storage tank. This air is led to the starter, which, acting as a compound air motor, spins the engine. As soon as the engine picks up or the button is released, the starter automatically disengages and remains idle except when compressing or when the button is pressed again. In order to compress air, another button on the control valve is pressed when the engine is running, causing the starter to be driven by the engine, and, operating as a two-stage compressor, to recharge the storage tank. When a predetermined pressure is reached the compressor button automatically releases and the starter becomes idle. It is stated that this starter, which is of simple and sturdy construction and requires practically no attention, may be installed on any motor with comparative ease.

WINTON

The purchaser of an engine must of necessity take much for granted. He cannot have intimate knowledge of the degree of excellence represented in the engine he buys.

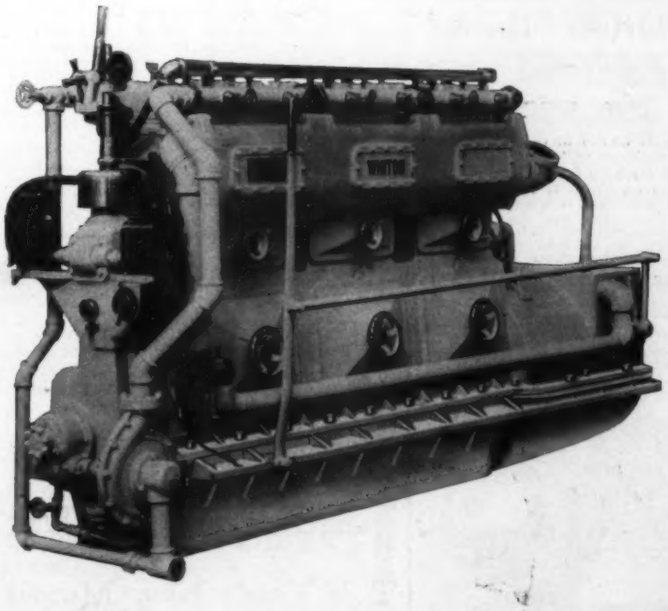
As a rule therefore, entire dependence is placed in the engine builder to make his product measure up to the standard expected of it.

Modernism

The manufacturer whose design is antiquated, whose methods are obsolete, cannot do this. However good such an engine may have been in the past, it is not to be classed with the machine of modern design and construction.

Winton engines are modern. In their design precedent was followed only so far as was compatible with progressive ideas. In construction, special tools have injected a new element of quality.

That the high quality of Winton engines will be upheld in every particular is the purchaser's protection and our guarantee.



For complete information address

Winton Engine Works
Cleveland, Ohio

BUILD YOUR OWN BOAT

The Frame We Ship You

from our patterns of knock down frames. You save ⅔ the cost and enjoy the work. Patterns and frames for boats of all types and sizes, from the canoe pattern at $1.75 to the 65 ft. yacht frame at $350, and a full line of heavy built commercial boat frames.

SEND FOR OUR CATALOG

which tells you all about it. You can build a 30 ft. launch for $30 from patterns that you could not buy at any factory for less than $150, or you can buy the complete frame and build this 50 ft. cruiser shown in the picture for less money than you would have to pay for the cheapest 25 ft. finished cruiser you could buy.

The Boat You Build

DEFOE BOAT & MOTOR WORKS, 3218 State St., Bay City, Mich.

Sturtevant

Marine Motors

ASK FOR BULLETIN

B. F. STURTEVANT COMPANY

HYDE PARK, BOSTON, MASS.

GIES REVERSE GEAR

The Choice of 25,000 Motorboat Owners

OPEN		ENCLOSED	
Special No. 1,	$15.00	Model E : :	$20.00
Model A : :	24.00	Model F : :	30.00
Model B : :	42.00		

GIES GEAR COMPANY

45 EAST FORT STREET DETROIT, MICHIGAN

PERKINS MARINE MOTOR

The Perkins Motor is the ideal one for owners of small boats, launches, tenders, and general small marine craft. It furnishes maximum engine efficiency and power at minimum weight—above all QUALITY. Quantity limited. Price, $75.00. Write for specifications.

PURITAN MACHINE COMPANY

60 Tenth Street Detroit, U. S. A.

EVINRUDE DETACHABLE ROWBOAT MOTOR

Attached to any rowboat or dinghy in less than one minute. Exclusive features: Built-in Reversible Magneto, Maxim Silencer, Compensating Spring Shock Absorbing Device. Write for booklet and prices.

EVINRUDE MOTOR CO.

3 Evinrude Block Milwaukee, Wis.

Largest Manufacturers of Rowboat Motors in the World.

Trade- DELINEOGRAPH -Mark

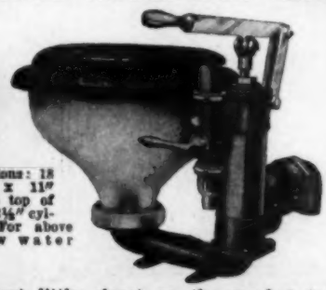
PATENTED

Use a DELINEOGRAPH in the NAVIGATION contest and you will win out. It is a most efficient protractor for chart work, and with the sights in position it is a moment's work to take a number of bearings for locating your position or any other object. Sent on 30 days' trial. Price complete in mahogany case, $7.00. Full description and catalog of DIRIGO compasses sent on request. *Manufactured by*

Eugene M. Sherman Box 3 Bellevue, Wash.

FIGURE 1404

IMPROVED MOTOR BOAT CLOSET



Dimensions: 18 x 18 x 11" high to top of bowl; 2½" cylinder. For above or below water line.

The best little closet on the market today, possessing many of the advantages of the large size toilet. All brass and porcelain. Oak seat and cover.

Price.....$25.00

THE J. H. CURTISS CO. 2 South Street, New York

A New Departure in Power Plants

(*Continued from page 16*)

17 feet long with an athwartship berth at the after end and extension transoms on each side. When fitted for racing trim these transoms will be made into four permanent berths with fixed leeboards. Back of the transoms are the alcoves and bookcases usual in a cruising yacht of this type and beneath them are large drawers for stowage. At the forward end, on each side, is a large wardrobe locker and in the center a buffet sideboard. A door on the starboard side leads to a toilet room of good size and on the port side is the door to the galley. The galley is 5 feet fore and aft and 5 feet 2 inches from the face of the icebox to the fore and aft bulkhead. A coal range is set against the forward bulkhead and nearly over the center line of the vessel. This brings it nearly over the center of buoyancy, and in the position where there will be the least motion, so that the cook will have a fairly easy time keeping his pots and kettles from jumping off the stove in bad weather. The icebox is extra large and a hatch is provided over the galley through which ice can be taken and the cook given fresh air when the weather permits. The galley stove pipe is carried through the engine-room and up into the after stack.

The accommodations forward consist of a large stateroom and toilet room. The companionway steps are on the starboard side, leading from the bridge deck. There are three berths here, one on each side, and one athwartship under the bridge deck. The chart case is placed on the port side, where it is conveniently reached from the foot of the companionway steps.

A 32-Foot V-Bottom Cruiser

(*Continued from page 19*)

inch of space is utilized. It is difficult for one to realize that the boat is only a 32-footer. The engine is under the cockpit floor and the icebox, stove, sink and dish lockers are all covered when not in use, giving the cabin a roomy appearance.

The cabin is entirely finished in oiled mahogany and the toilet room in white enamel. The hull is finished in a light gray with the turtle deck of the cabin an olive green. All outside trim is mahogany, except the decks, and these are in white pine with seams laid with black marine glue.

The electrical equipment is unusually complete and includes several novel features. For example, there is a small tell-tale lamp in series with each of the four running lights, so that one can tell at a glance whether or not the latter are burning.

MoToR BoatinG through its Prize Contest in Questions & Answers department provided practically all of Fandango's furnishings, as follows: Directly from prizes—Pyro stove, dynamo, fog bell, running lights, life preservers, ring buoys, fenders, bilge pump, four Wicker-Kraft chairs and two Janney-Steinmetz 35-gallon tanks.

Indirectly, through space rates for contributions to this department: Cushions, fire extinguisher, and complete elctrical equipment, including storage battery, volt-ammeter, lamps, fixtures and switches.

Putting in an Engine Bed

(*Continued from page 14*)

dinary use. Take care to see the portion on which motor is to set is at the same angle as the string when no flexible coupling is used. Next cut the front crosspiece as per sketch. It should conform on the bottom to the shape of the rib on which you have determined it shall set, and fit snugly to the side timbers, with the distance *X* equal to that between centers of bolt holes on engine base less the thickness of one of the side timbers.

The upper central portion of this piece should be hollowed out if necessary for clearance of crankcase. The other two crosspieces *C* and *D* are then cut with length equal to *X* and their bottom edge shaped to suit the rib on which you desire each to rest. The piece at *D* need not be so high as the one at *C*. The timbers are next fastened together (as per sketch) using long galvanized screws at the places indicated. Now draw a pencil line across each rib (at place where bed is to be fastened) parallel to the keel and at a distance from its (the keel's) center equal to one-half *X*. Do the same on the ribs along the other side of keel. This gives a line along which to lay the inner edge of side timbers. Now set the bed at the place already decided upon laying on top of ribs (notching is not necessary) and clamping in position. Next drill all bolt holes at places called for in the drawing. All crosspieces should be bolted through the keel. The front one is also through the rib and planking at each end. The side timbers are then bolted through the ribs and planking, skipping every other rib. The bolt holes in the center of the crosspieces should be somewhat larger in diameter than the bolts used. Where bolts go through large, lead-coated washers should be used. Do not bolt to the planking only as this will soon cause many leaks. Next line up engine and shaft as per instructions in the April Contest. When alignment is secured, fasten engine to the motor bed with lag screws which are in many cases furnished with the motor and fittings.

This Year's New Motors

(*Continued from page 12*)

H.P.	Motor	Bore & Stroke	R.P.M.	Wt.
200	Half	8 x12	400	12,000
200	Robert's	5¾x6	1,500	900
200	Van	5½x6	1,700	1,640
275		8 x8	950	3,000
300	Sterling	6¾x9	1,000	5,600
300	Speedway	7½x8	1,100	3,600
400	Harbeck (Loew Victor)	6¾x8	1,500	3,150

Michigan Steel Launch $96

Complete with engine, ready to run, 18, 20, 23, 27-foot boats at proportionate prices. Equipped with famous Detroit 2-cycle engines. Only 3 moving parts. The safe launch. Non-sinkable. Needs no boat house. Free catalogue. Steel Rowboats, $30. Michigan Steel Boat Co., 1236 Jefferson Ave., Detroit, Mich.

Put "Pep" in your Motor Boat

The RANDERSON AUTOMATIC PISTON RINGS will give your engine more power at a low consumption of gas. Get them now.

DU BOIS MACHINE SHOP, Inc.

ALBANY, N. Y.

If you want good circulation on your Automobile, Launch or Motor Boat, use a

LOBEE PUMP

LOBEE PUMP & MACHINERY CO.

57 Bridge Street Buffalo, N. Y.

SHAW PROPELLER

(Patented)

Scientifically designed to secure maximum thrust efficiency from every square inch of surface—and does it. Manganese bronze. Guaranteed.

Write for prices and guarantee

SHAW PROPELLER CO., Board of Trade Bldg. Boston, Mass.

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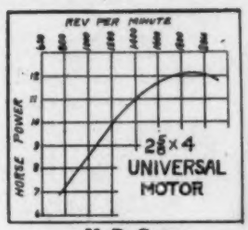

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Model C—1916 model with many improvements

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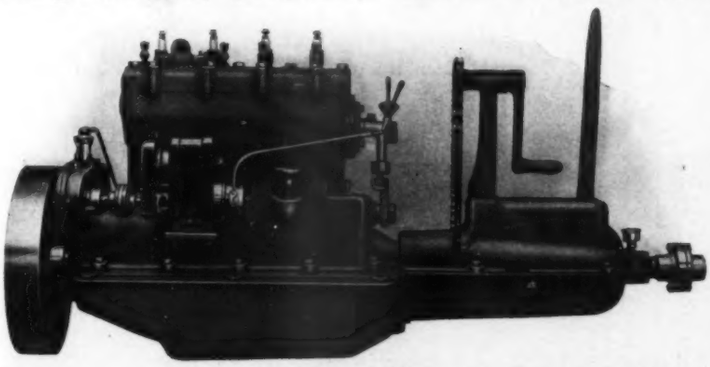
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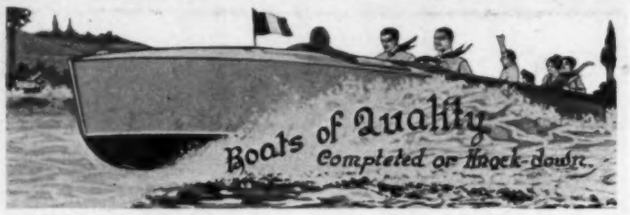

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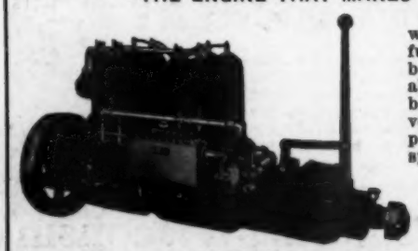

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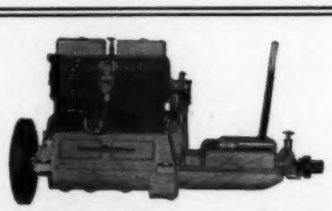

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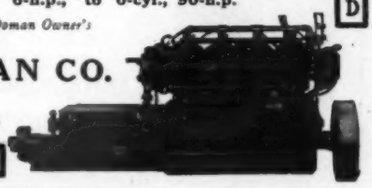

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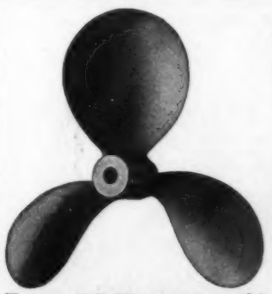

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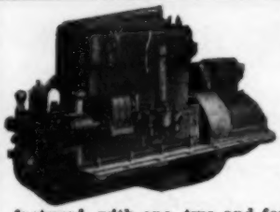

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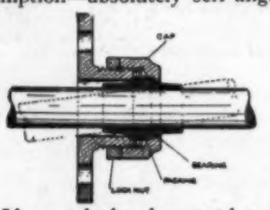

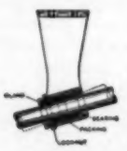

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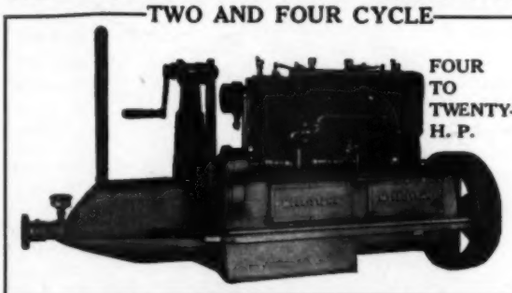

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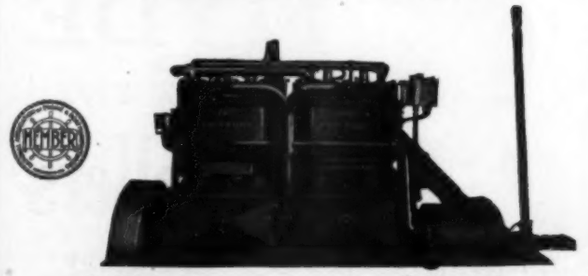

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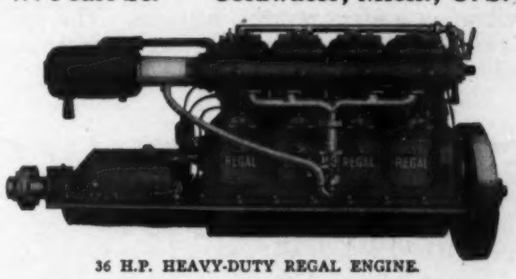

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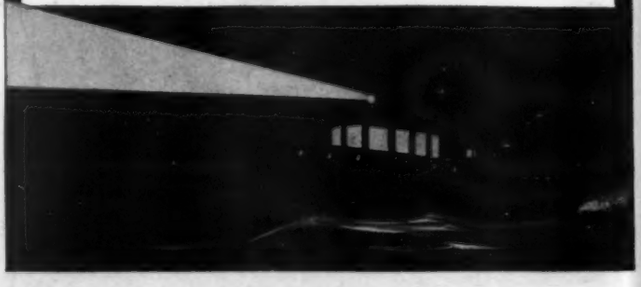
THE APPLE ELECTRIC COMPANY
Factory, NEWARK, N. J., U. S. A.



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A Detroit Mechanical Force Feed Oiler means real economy because it is adjusted by the operator to feed exactly the amount of oil required—no more—no less.

This means a minimum of oil used for perfect results; but the *real economy*—the *big saving* is evidenced in the freedom from repair bills—the greater service and longer life of the machine.

Detroit Mechanical Force Feed Oilers

are the best possible insurance against burned out bearings, scored pistons and cylinders, annoying delays and shut-downs due to faulty lubrication.

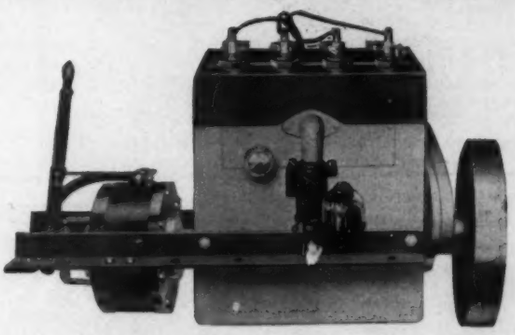
They are made in styles and sizes for every kind of gas—gasoline or oil engine, marine stationary or automobile. Equipped with pulley ratchet, gear or sprocket drive for easy installation on *any engine.*

Catalog P-64 giving full information gladly sent on request.

DETROIT LUBRICATOR COMPANY
DETROIT, U. S. A.

Makers of the Stewart Carburetor

15 H.P. ABLE $125 Complete
Four Cylinder Four Cycle

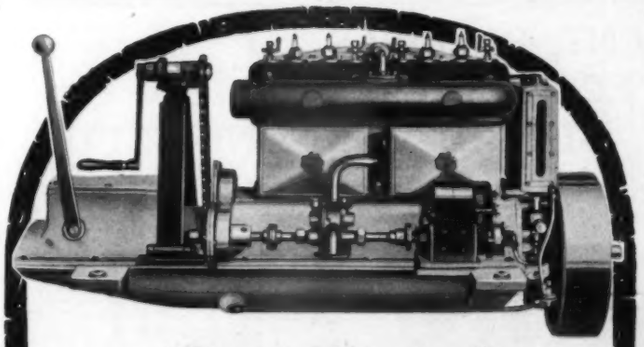


Weight Only 180 Lbs. Complete

A new idea for internal combustion engines and altogether the most radical improvement ever introduced in the marine field. A compact, powerful, high grade four-cycle motor that has never been equalled for light weight or low price. Price includes complete equipment as illustrated.—Splitdorf Dixie Magneto, Carburetor, Spark Plugs and Reverse Gear.

Write today for catalog.

ABLE ENGINE CO., Inc.
405-42nd St. Bldg., New York City



"Sweet Running"

That's what motor boat fans say about this Type CM (4 cylinder, 3¾ x 5) Wisconsin Motor. It runs smoothly and quietly, with almost no vibration, getting every ounce of power out of every gallon of gasoline. It's light and compact, yet has surplus power and endurance. At $450.00 f. o. b. Milwaukee, it is a good investment.

Wisconsin Motors

are "sweet running" because they are correct in design, with all reciprocating parts perfectly balanced, and because of the materials and workmanship that go into them.

Write for specifications of different types, four, six and eight cylinders.

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Marine Equipment & Supply Co., 610 Arch St., Philadelphia Representatives.

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HEAVY DUTY REVERSE GEAR

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The only heavy duty gear on the market that has same speed ahead and astern, that does not depend on locked gear teeth for the forward drive.

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Manufacturers of Heavy Duty and High Speed Reversing Gears, One Way Clutches, Rear Starter, etc.

AGENTS:—J. King & Co., 10 Church Row, Limehouse, London, Eng. L. H. Coolidge Co., Seattle, Wash. Gasoline Engine Equipment Co., 25 Liberty Street, New York. Rapp-Hunkins Co., Boston. Wood, Vallance & Legatt, Vancouver, B. C. Shea Sales Co., Montreal. Thompson Engine & Launch Co., Fort Charles St., Baltimore. A. R. Williams Mchy. Co., Toronto. Warren Boat Co., Chicago.

1916 TWELFTH ANNUAL

Grand Central Palace, New York
Opens Saturday, January 29th
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The World's Greatest Display of
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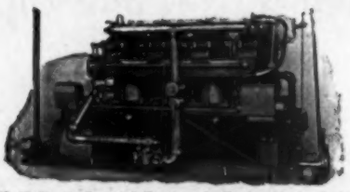

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Gasoline Yachts and Engines

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TREGURTHA WATER TUBE BOILERS
STEAM LAUNCHES AND ENGINES
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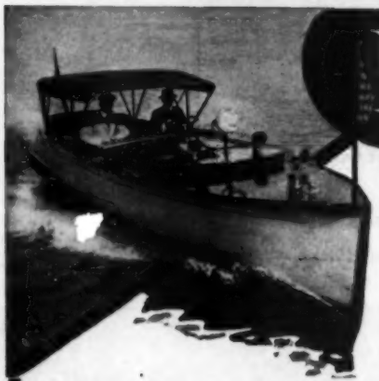

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Discriminating boat buyers buy Niagara boats because the quality is there, the price is right and they are up-to-date in speed, appearance and design. Our specialty is building

FAST SEAWORTHY RUNABOUTS—HIGH SPEED EXPRESS CRUISERS

We have facilities and experience of many years to offer boat buyers. In finish, equipment, workmanship and material the Niagara trademark stands for the very best. *Let us know what kind of boat you would like for next year.*

Write for Our Handsome Catalogs

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RALACO
THE SILENT SIMPLIFIED ENGINE

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10 to 75 H.P.—2 to 6 cylinders

THE S. M. JONES COMPANY
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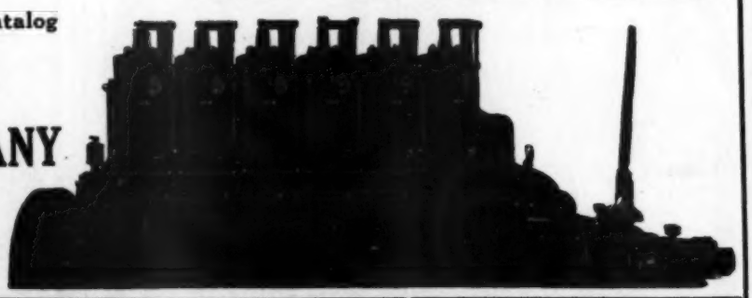
FOR EFFICIENT, RELIABLE AND ECONOMICAL SERVICE THERE ARE NONE BETTER.



THE MATTHEWS CRUISER IS BUILT WITH BUT ONE GOAL IN VIEW—

PERFECTION

66 Ft. High Speed Cruiser CELERITY.

Read this:—"Yours of the eighth inst. received. In regard to selling the CELERITY, I will say that if I should fix a price, it would be prohibitive. I have traveled around a lot since writing you and have seen a great number of boats, especially around New York, and I am darned if I have seen as graceful a boat as CELERITY. I am very proud of her. The only change I could make would be to put in more powerful engines and my good sense tells me I would be foolish to do that. I leave here for Florida about the 20th of this month.

Yours truly,
C. S. CUMMINGS."

Why experiment! Cruiser literature upon request.

The Matthews Boat Company
Port Clinton, Ohio

Two New, Standardized, Stock Models, Suitable for Southern Service.

Forty-foot modified U-Bottom, Military Type Express Cruiser. Two cabins, accommodating 8 people, Electric starter and lights, running hot and cold water, one man control. An excellent sea boat. Speed, with 6-cylinder Sterling or equivalent, 16-20 m.p.h. Also built in lengths of 45 and 50 feet, for speeds of 23-25 m.p.h.

Thirty-foot displacement Runabout, accommodating 10 passengers. Auto type control and top, electric starter and lights, disappearing windshield. Finished in white enamel and mahogany. The finest family runabout built. Speed, with 4-cylinder Sterling or equivalent, 22 m.p.h. Also built in U-Bottom type for speeds up to 35 m.p.h.

Portfolio catalog on request.

SAINT LOUIS YACHT & BOAT CO., SAINT LOUIS U. S. A.

Frisbie VALVE-IN-HEAD MOTOR

FRONT DOOR OR SIDE DOOR?

Suppose you built a house with only one little doorway around on the side. You'd waste a lot of time and extra steps every time you went in and out. The Frisbie Motor is like a house with big front doors. Both inlet and exhaust valves, which are extra large, open directly into the cylinder heads. The gas gets in and out more quickly than is possible where the valves are on the side. As a consequence each cylinder draws a bigger charge on the intake, and scavenges the burnt gases much more completely on the exhaust stroke.

You'll like the Frisbie Motor, whether your boat is in pleasure service or commercial work. 1, 2, 3, 4 and 6 cylinders. 3 to 75 Horsepower.

Write today for latest illustrated catalog

7 College St.,
The Frisbie Motor Co., Middletown, Conn., U. S. A.

VIM MOTORS

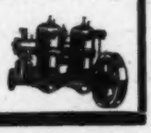
5 to 27 H. P. — 1, 2 and 3 Cylinder

Three types: pleasure, speed and heavy duty. Every Vim engine is a specialist in its field,—best for the purpose. Every one is a worker,—strong, simple, accessible,—absolutely dependable. Built for a lifetime. The boat builder's standby,—the boat owner's pride. Double ignition. Non-backfiring.

Runs on Gasoline or Kerosene

There is a Vim for speed boats,—light, flexible, strong.
There is a Vim for work boats,—rugged, powerful, reliable.
There is a Vim for pleasure boats,—simple, easily managed, accessible.
Whichever type of Vim you buy you will have a good reliable motor at a reasonable price.

Get the handsome new Vim catalog and look over the line at your leisure.



THE VIM MOTOR CO.
2801 Water St., Sandusky, Ohio U. S. A.

Sell Your Old Engine in the Market Place

Motor Boating's Market Place columns offer the buyer and seller of used motor boats, fittings, etc., a quick and convenient medium of exchange.

If you are getting a new boat or a new engine, and wish to sell the old one, don't have it rotting, or rusting, or collecting storage charges—sell it—in the Market Place.

Perhaps you have waterfront property suitable for a yacht club, or for individual yachting enthusiasts—the Market Place goes to over 25,000 individuals interested in all things pertaining to the water.

Try this Market—it is resultful.

MOTOR BOATING
119 WEST 40th STREET NEW YORK CITY

FLOWS FREELY AT ZERO

THIS is most **important** during winter months. You should know whether the oil you are using **"flows freely at Zero."** All oils do not possess this feature — notably the paraffine-base oils, which thicken up under cold, and often cause great damage to the motor.

The safe way is to ask for SUPREME AUTO OIL—it "flows freely at Zero," and leaves no carbon, owing to the fact that it is a Southern Asphalt-base Oil containing no paraffine to gum, stick and thicken.

Gulf Refining Company
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WOLVERINE THE MOTOR WITH THE BORE AND STROKE for MARINE SERVICE

FUELS { KEROSENE (PARAFFIN) / GASOLINE (PETROL) / DISTILLATE / SUCTION PRODUCER GAS

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WOLVERINE MOTOR WORKS Bridgeport, Conn., U.S.A.

PROFITABLE ADVERTISING

consists of placing your selling message before the greatest number of possible buyers.

Motor Boating has the largest guaranteed circulation in the marine field, reaching boat owners exclusively and of a class who can afford to buy what you want to sell. **Write for rates and information.**

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32-FT. DAY CRUISER.

This boat is running over 15 miles per hour, and you will note that she rides easily and throws practically no spray. The model may be driven from 10 to 30 miles per hour without waste of power.

VALLEY BOATS

We have a fine line of up-to-date Stock models which we furnish complete or knockdown. If you want a Special Boat we will design and build it for you, or build it from plans which you furnish. Our line consists of Outboard Motor Rowboats at special introductory price.

HYDROPLANES, RUNABOUTS AND CRUISERS.

All of our boats are built to the same standard, and on account of their up-to-date design and construction and because we use the very best of material and workmanship, all of our customers are pleased and are boosting VALLEY Boats.

SEND FOR OUR CATALOG AND INFORMATION.

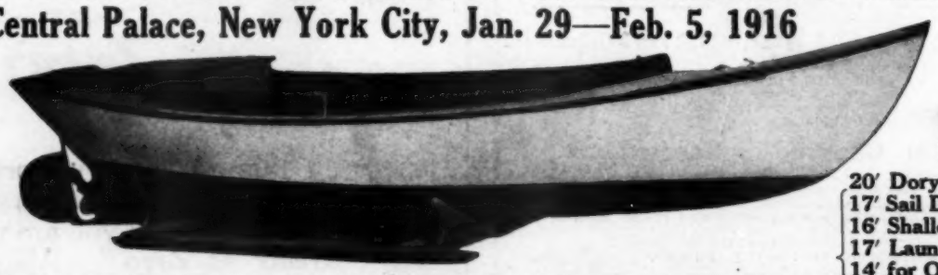
Valley Boat Company, River Street, Saginaw, Mich., U. S. A.

DON'T BUY A BOAT

UNTIL YOU HAVE SEEN THE EXHIBIT OF THE CAPE COD POWER DORY CO.

At Grand Central Palace, New York City, Jan. 29—Feb. 5, 1916

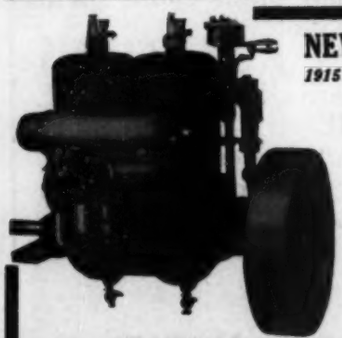
SEE THIS AT THE SHOW



AT THE SHOW

20′ Dory Launch
17′ Sail Dory
16′ Shallow Draft
17′ Launch
14′ for Outboard Motor
10′ Row Boats
12′ Row Boats

CAPE COD POWER & DORY CO., 455 Main St., Wareham, Mass.



NEW ROBERTS MOTOR

1915 MODEL 20 MORE SPEED

2 cylinder, rated 6 H.P., guaranteed to develop 8. Roberts motors have always been good; this year's line is 50 per cent better than ever before. This new engine is right up to the top mark of power and speed. Will make higher speed or run at lower speed than any other 6 H.P. Engine we know of. Lightest in weight for the power developed. Few moving parts. Horizontal float feed carburetor. Standard aluminum intake and water-jacketed manifold; $110 complete. Order yours. If interested in a good seller, get agents' proposition.

THE ROBERTS MOTOR MFG. CO. 166 ROBERTS BLDG. SANDUSKY, OHIO

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Marine Supplies and Motor Boat Accessories

Central Location Complete Stocks
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Our 500-page Marine Catalog, No. 102, is ready for distribution; send 20c. to cover postage—it will be refunded on your first order.

Geo. B. Carpenter & Co.

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"The Great Central Market"

More Speed Guaranteed

If you want more speed and efficiency out of your boat without going to the expense of a new engine or other elaborate equipment why not put your problem up to us? For years we have had a standing guarantee to increase the speed of any boat 1 to 3 Miles per Hour with a new

BRYANT AND BERRY PROPELLER

The B & B Propeller must be unusually efficient for we have been making this money-back guarantee for the past seven years and have never had occasion to regret it. You can try one of our wheels without any chance of dissatisfaction or loss; we take all the risk.

Bryant & Berry Propellers are made of a special bronze, as strong as steel, and are accurate in workmanship, pitch and balance to the highest possible degree. The name "Bryant and Berry" is stamped on the hub of every genuine B & B wheel.

Write us today about the size of your boat, engine, details of construction and kind of service. We will tell you without obligation which B & B wheel to use and how much it would cost you

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MARBLEHEAD ANTIFOULING GREEN Bottom Paint

EMERALD GREEN LIGHT GREEN CREAM WHITE

FOR WOOD OR STEEL STAYS CLEAN

CRUISING IN WARM OR TROPICAL WATERS

It is equal to copper sheathing as a protection against Teredos and far superior as an Anti-Fouler.

It stays clean, saves hauling out, preserves the wood and saves heavy expense in painting and repairs.

It covers twice the surface, this cuts the first cost in half.

For Racing it takes a wonderful slippery polish that adds to speed.

It is not a copper paint and is absolutely non-corrosive on metal.

Specified on new boats it is applied on the bare wood and is a powerful preventive of decay.

STEARNS-McKAY MFG. CO.

MARBLEHEAD MASS. U.S.A.

That it's a

Racinewis

is all you really need to know about the cruiser you buy.

Behind this name lies the skill of twenty years of boat designing and building. Racinewis cruisers and motor boats are

Used by U. S. Government In Life Saving and Lighthouse Service

—by foreign governments, by institutions and individuals at home and abroad. In all Racinewis boats you will find safety, comfort and luxuriousness—combined with speed, power and dependability.

Write for catalog of cruisers, speed and semi-speed family launches, motor boats, rowboats and the famous Racinewis canoe. Mention your preference when writing.

RACINE BOAT COMPANY

1615 Racine St., Racine, Wisconsin

Economy and Satisfaction

A marine engine that doesn't give complete satisfaction is a poor investment at any price, no matter how little it costs in the first place, or how much engine (by weight) you seem to get for your money. It is far better to pay a little more and get a really high grade

CAMPBELL

Four Cycle

MARINE MOTOR

Campbell Motors are not offered in price competition with cheap motors, but they always prove in the long run to be the cheapest motors possible to install, cost of running, repairs, etc., considered. They are light in weight, simple in construction, noiseless in operation, strong and durable, and will start easily and run continuously under any weather conditions. In fuel consumption they are the most economical motors on the market.

Almost any engine will give you power enough if it has sufficient bore and stroke; almost any engine can be built strong enough if there is no limit to the weight. The Campbell reputation, however, has been built upon its high efficiency in relation to weight, having unusual power, strength and durability for an engine of its size.

One, two, three, four and six cylinder motors for pleasure and work boats, from 5 to 60 H.P. distinctive open base construction. We also build Campbell High Speed Motors in 30-40 H.P., 75-100 H.P., and 100-125 H.P. sizes. Rowboat Motors, Lighting and Pumping Plants.

"Buy a Campbell and Keep Going"

Write today for Catalog giving complete information and letters from users

Campbell Motor Manufacturing Co.

102 South Third St., Minneapolis, Minn.

The New Automatic Cruiser and Yacht Engines

There have been repeated demands for a cruiser and pleasure boat engine having the same degree of stability, endurance and reliability as the famous Automatic Heavy Duty Engines which for many years have been so successful in working boats and heavy commercial service. In response to this demand we announce a new line of Automatics designed especially for the cruiser and yacht trade.

Before making this formal announcement we have subjected the Automatic Cruiser Engines to every possible test. They have been tried out in every kind of work during the past two years and we have been unable to find room for improvement in any detail of the design.

In these engines we use independent "L"-type cylinders with large mechanical valves which can be reground and seated without removing the cylinder head. All bearings are removable, extra large and made of special bronze, without babbitt. The Oiling System is something absolutely new in the marine field—entirely enclosed, an integral part of the engine itself. Jump spark ignition. Any make of magneto and carburetor supplied at option of the purchaser.

Four models—all four cylinder, four cycle—5 x 7", 6½ x 8", 7½ x 9" and 8½ x 10". Speed 400 to 1,000 R. P. M.
Automatic Heavy Duty Engines—3 to 250 H. P.

See These Engines at the New York Motor Boat Show

Write today for catalogs, mentioning in which type you are interested

The Automatic Machine Company, BRIDGEPORT, CONNECTICUT, U.S.A.

Agents and Distributors in Every Part of the Globe

Are You Satisfied?

Now that the season is almost over, stop a minute and consider whether your engine has run as smoothly this year as you would like to have it. Are you satisfied? Do you get as much power and speed, and as good economy as you used to get? Can you afford to get along with 50% or 75% efficiency, when for a few dollars more you can get 100% efficiency, at least in so far as carburetion is concerned? Perhaps all you need is a

KINGSTON "ENCLOSED TYPE" CARBURETOR

A new Kingston Carburetor puts a degree of snap and vim into your engine that you can secure in no other way. Simply the feeling that the engine is doing better is worth all it costs, to say nothing of the improvement in fuel economy and many other advantages. It is made for all sizes and types of engines.

This carburetor is absolutely up-to-date—designed for the poor grade of gasoline we all have to use these days. Remember, the gasoline used three to five years ago was so much more volatile and easy to vaporize that a carburetor designed for that fuel is utterly inadequate today.

Let us prove what a Kingston will do for you at our risk. If it satisfies you, you will want it. If it doesn't, you lose nothing. Put it up to us.

Write today for price, trial offer and guarantee.

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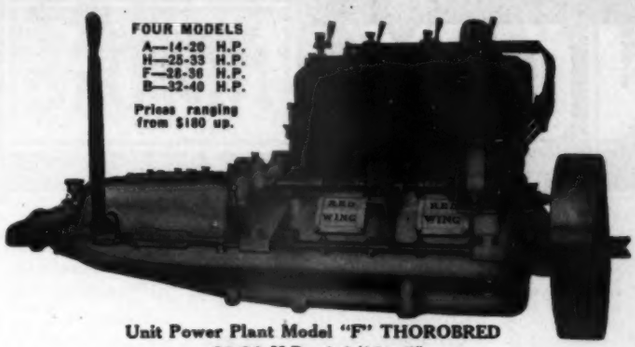

Unit Power Plant Model "F" THOROBRED
28-36 H.P., 4 1/16 x 5"
Furnished with or without Unit Power Plant

Red Wing Thorobred
THE MOTOR WITH POWER TO SPARE

Amid the Submarines

In these strenuous days the Harbor Master of Gibraltar, Spain, is a busy man. If a submarine pokes it nose up for air, it's up to him to investigate. When a man's going to chase submarines, he naturally doesn't go to sea in a peanut shell or depend upon the wind and waves as motive power.

The Gibraltar Harbor Master had to have a motor that was "there" under all emergencies. He investigated the scores of power boats in the harbor, found which were rendering day-in and day-out service economically and without a hitch. Then he ordered a Red Wing Thorobred. This is not the first, nor will it be the last Thorobred in Gibraltar Harbor, for Thorobred satisfaction brings "repeat orders" from all corners of the earth.

"Thorobreds" are as fine a marine motor as skill and money can build. The price—well, if we sell hundreds where other manufacturers sell one naturally we can manufacture a better motor at less cost. But that's your profit.

Write for 1916 catalog of our Five 1916 Models:

Model A—3½x4½", 14-20 H.P. Price	$180.00 and up
Model AA—3¾x4¾", 18-24 H.P. Price	210.00 and up
Model H—3¾x5¼", 25-33 H.P. Price	250.00 and up
Model F—4 1/16x5", 28-36 H.P. Price	285.00 and up
Model B—4½x5/, 32-40 H.P. Price	350.00 and up

RED WING MOTOR CO. Dept. B. RED WING, MINN., U. S. A.

Kyanize
KY-AN-IZE

Waterproof Spar Finish

The most durable exterior varnish made. Protect your craft with the best. Thousands of gallons of Kyanize Spar Finish are used in the United States Navy. Climate, salt or fresh water cannot affect it. It is the *right* varnish for all marine work.

Use Kyanize White Enamel if you want your craft covered with a durable enamel different from the paint you've been using—that dries a hard beautiful surface, that won't crack, chip or peel, and can stand all kinds of climate.

Kyanize is used on the high grade boats. Every can guaranteed to do all we claim for it.

If there is no Kyanize Agent in your town don't take something "just as good." Write us direct.

Boston Varnish Company
Everett Station, Boston, U. S. A.

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519 West Twelfth St.

San Francisco Warehouse and Office
311 California St.

MARINE KNOX MOTORS

Several changes and refinements comprise the 1916 improvements to the famous Knox Marine Motors. Minor details, not fundamentally important in themselves, but of considerable value in the aggregate. These motors have been giving such complete satisfaction for the past fifteen years that we could have no reason for changing the general construction in any way.

Knox Two-Cycle Motors, which are built in one, two and three cylinders, from 3 to 22 H.P., will be furnished in combination two-port and three-port type, instead of straight three-port as heretofore. Circuit breaker and ignition have been improved, and the intake manifold redesigned to accommodate the new Knox Model "E-K" Gasoline-Kerosene Carburetor. Knox 4-cycle models, which are built in two models of 20 H.P. and 40 H.P., respectively, are continued with very slight changes.

Knox Motors were pioneers in the use of kerosene, due to the excellence of the Knox carburetor. Our new Model "E-K" Carburetor is made to use gasoline or kerosene, the fuel being heated by the exhaust gas **before** it passes the needle valve. This method is infinitely better than simply mixing the cold fuel with hot air from the engine base or exhaust pipe. We guarantee that with this carburetor any engine will be just as flexible on kerosene, have full power and will not carbonize. It gives 10 to 30% better results than any other carburetor or kerosene device. No matter what motor you have, you should have one of these carburetors.

Knox Launches are built in stock models from 19 to 35 feet long. We also build Knox Cruisers on special order. Boats shipped knocked down to foreign countries.

Write today for complete catalogs on the type of motor or boat that interests you.
And be sure to get full information on our wonderful new Model "E-K" Carburetor.

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VIPER
Trade Mark Reg.
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VIPER SEA SLED

HICKMAN PATENTS

SEA SLED
Trade Mark Reg.
U. S. Pat. Off.

24-foot Standard Sea Sled running at 35 miles per hour

To-day no man is informed concerning motor driven boats capable of any speed unless he has learned what we have to say.

Bulletin No. 18, by Mr. Hickman, just published, gives information that is not available elsewhere.

Would it surprise you to learn that not only has the Sea Sled every other advantage over the older type of boat, but that it is already more efficient?

Murray & Tregurtha Co.
340 West First St., South Boston, Mass.

Viper Co., Ltd.
Pictou, Nova Scotia, Canada

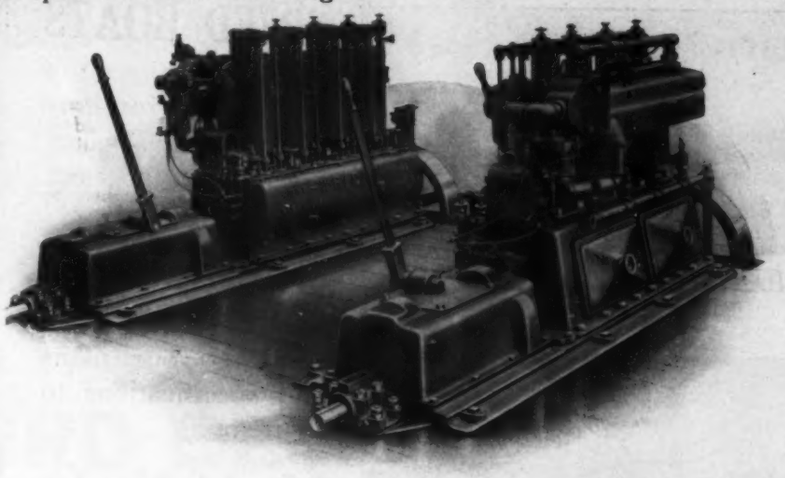
WRIGHT HEAVY DUTY MARINE ENGINES

A *real* heavy duty engine of the latest overhead valve type, the Wright Engine is built to endure the heaviest kind of service with the lowest possible operating cost. If you want an engine for this sort of work you will find many points of special interest in this engine.

The entire valve mechanism and camshaft can be removed without stripping the engine or taking off any other parts. Both valves are located within the radius of the cylinder, giving a perfect round dome for the combustion chamber without recesses or pockets. The valve-in-head construction gives 20 to 25% more power than other motors of the same bore and stroke.

A gear driven Bosch Dual Low-Tension Magneto with magnetic Make and Break Ignition is used. For those desiring to use kerosene fuel we supply two carburetors, one for gasoline and one for kerosene, with a separate generator for thoroughly gasifying the kerosene. The throttle valve use in these engines is of the piston type and completely shuts off one fuel when the other fuel is being used.

Reverse gear with large spurs is built in on the same bed with the engine and completely enclosed. No gears are in use on the forward drive. Large adjustable Ring Type Thrust Bearings make it possible to take up all wear and keep the shafts in perfect alignment.



3-Cylinder, 6 in. Diameter, 7½ in. Stroke, 22 to 30 H. P.
3-Cylinder, 7½ in. Diameter, 9 in. Stroke, 35 to 45 H. P.
4-Cylinder, 6 in. Diameter, 7½ in. Stroke, 30 to 40 H. P.
4-Cylinder, 7½ in. Diameter, 9 in. Stroke, 45 to 60 H. P.
6-Cylinder, 6 in. Diameter, 7½ in. Stroke, 45 to 65 H. P.
6-Cylinder, 7½ in. Diameter, 9 in. Stroke, 70 to 90 H. P.

The speed of the 6 x 7½ runs from 400 to 550 R. P. M.
The speed of the 7½ x 9 runs from 350 to 475 R. P. M.

WRITE TODAY FOR FULL DETAILS OF THIS ENGINE. RELIABLE AGENTS WANTED.

WRIGHT MACHINE COMPANY :: Owensboro, Ky.

"SAFETY-FIRST" FIRE EXTINGUISHERS

Safety-First Protection for Your Boat

It doesn't matter how careful you are, or how much insurance you carry, your boat is not properly protected against the possibility of serious damage by fire unless you have a reliable chemical fire extinguisher aboard. It is far more necessary than on shore, as a bad fire here is a matter of life and death.

The Safety-First Fire Extinguisher is without question the most practical device of its kind for marine or any other use. Not only is it 100% efficient for putting out all sorts of fires, but it is the easiest to use, therefore the most reliable in emergencies. **Approved by the Board of Steamboat Inspection Service.**

No other fire extinguisher on the market possesses all these advantages of the "Safety-First":—

Non-corrosive, non-poisonous, non-injurious.
Size, 2 quarts; weight, only eleven pounds.
Constant pressure, throwing effective stream 35 feet.
No pumping, therefore easiest to direct where needed.
All metal—no rubber or leather to rot or wear.
Effective for gasoline fires, electrical fires and all other fires.

Big enough to put out real fires with one charge, light enough for a woman or child, simple enough for anyone to use correctly when most excited, always ready to use—the Safety-First Extinguisher is the last word in efficiency and reliability. Made with 18-gauge seamless brass cylinder, phosphor bronze ends and all metal valve and hose. Tested for 300 lbs. pressure. Diameter, 4". Height, 16".

Red Enameled, $9.00 ***Nickel Plated, $10.00*** ***Lacquered Brass, $10.00***

Order a "Safety-First" for your boat today.
Attractive Proposition for Dealers and Jobbers. Write for it.

Hansen-Nieter Safety Co., Inc. 103 Park Ave., New York City

MATHIS priority in the houseboat field

has led some few people to overlook the unexcelled equipment of this yard for the building of

ENCHANTRESS, a 75-foot double-plank mahogany cruiser built for Louis Burk, Philadelphia.

SPEED BOATS

Naval Architects of discrimination have not done this — here are four recent speed boats, built by us, all designed by Bowes & Mower, Naval Architects, Philadelphia.

Send us your plans and specifications to figure on.

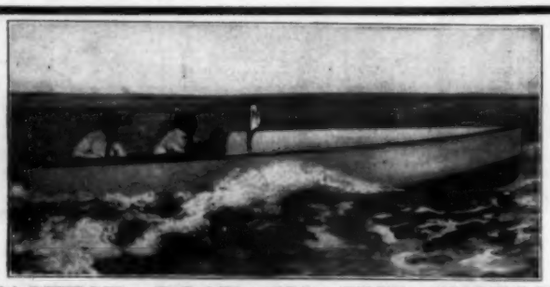
Mathis Yacht Building Co.

COOPER'S POINT
CAMDEN, - N. J.

AKBAR, a 72-foot double-plank mahogany cruiser built for George W. Childs Drexel, Philadelphia.

LADY BALTIMORE, a 75-foot speed boat built for the Hall-Scelay Motor Co., Baltimore, Md.

ACE, a 50-foot, high-speed, double-planked mahogany runabout built for George W. Childs Drexel, Philadelphia.



FASTEST BOAT IN THE WORLD

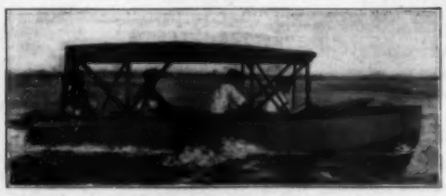
Two Views—17 Footer

$45 Complete k. d. boat as described.

$95 Finished boat ready for motor.

BIG BOAT BOOK FREE

showing over 100 designs. Cruisers—launches—sailboats rowboats and canoes



BROOKS MFG. CO.
6301 Rust Ave.
Saginaw, Mich.
U. S. A.

Utilize your spare time or make $10 and up per day putting these boats together for your local trade. No skill required. We furnish the knockdown boat complete (best oak and cypress), everything cut to shape and fitted, with hardware and fittings. The k. d. prices quoted include everything except paint. This is a real business opportunity. We have started hundreds.

BUILDER-AGENTS WANTED

10 to 32 Miles with 4 to 25 H. P.

A comfortable family launch or a racer. Semi-V bottom design—roomy, staunch and sea-worthy. Becomes a stepless hydroplane with 12-h.p. or more. We furnish the finished boats, painted, varnished, with fittings and steering gear, already for the motor at the prices quoted. Get our prices with 4- to 25-h.p. motor installed ready to run.

Two Views—15 Footer

Complete k. d. boat.... $25

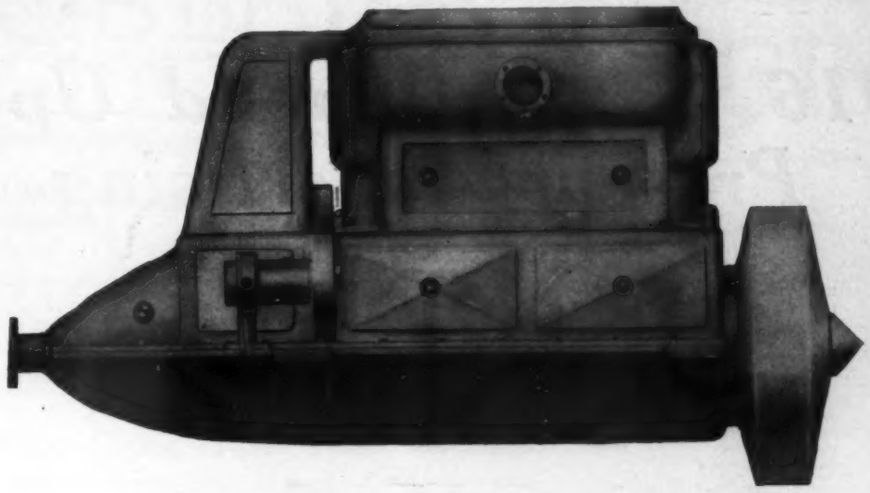
Finished ready for motor **$45**

With inboard or outboard motor installed **$89**

LOWEST PRICED BOAT IN THE WORLD

4 Cyl. 4 Cycle
4½ x 6

40-60 H. P.



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A motor of the greatest refinement and quality especially developed for high class runabouts by the best experts in America.

See it at the New York Show; ground floor, main isle.

F. K. LORD **120 Broadway, New York**

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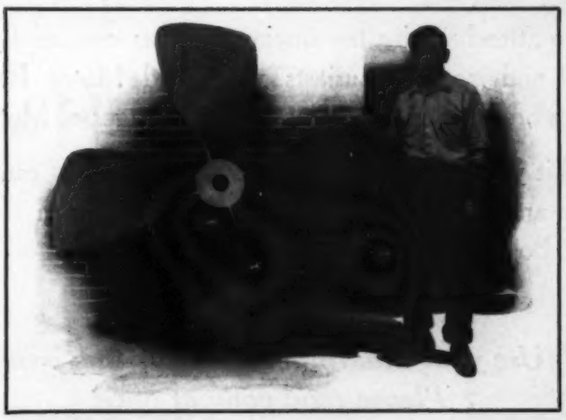
SPEED PROPELLERS
USED ON
DISTURBER IV.
First Mile a Minute Boat
62 Miles Per Hour
TECH, JR., II.
54.54 Miles Per Hour
FLYAWAY III.
Champion Racing Cruiser
LADY BALTIMORE
Panama-Pacific Racer



COMMERCIAL PROPELLERS

All sizes from 16 inch diameter to 6 feet. Any ordinary pitch.
Eight different styles.
2,000 different patterns.
Balance and workmanship guaranteed.
Large propellers made to order up to 1,500 lbs. weight.

MANGANESE BRONZE GUARANTEED

Will replace without charge if broken in use.

Write for Treatise "Propellers in a Nutshell"

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218 NORTH MAIN STREET - - - FREEPORT, NEW YORK

New York Branch for Local City Sales Only—Concourse, 50 Church St., New York City.

1916 Sales Depend Upon Present Advertising

MOTOR BOATING

New York Show Number
February Issue

February Motor Boating brings to every advertiser in the marine field an unequalled opportunity for promoting 1916 sales and 1916 profits—an opportunity which will not be duplicated this season.

This is the big New York Show Number—the most important issue of the year, because it deals with the most important event of the year.

The National Motor Boat Show marks the opening of the National Buying Season. It reveals the developments of the 1916 market to intending buyers and concentrates their attention upon boats and equipment until their purchases are decided.

Not only those who attend receive the buying impetus created by the show. Every one of the 25,000 and more enthusiasts who read Motor Boating gets it too—because the features of the show are reflected in the pages of Motor Boating.

Whether you exhibit your product at the show or not, you can build profits out of show-time attention and enthusiasm—by proper advertising in the New York Show Number of Motor Boating.

Use your maximum space in this issue
Please send copy at once

119 W. 40th St. Motor Boating New York City

FERRO MARINE ENGINES

It's What Goes Here That Counts

In the cockpit of your boat—there's the place to look for the answer to your demands for speed, reliability, comfort, economy. Is the engine right? And not only right as an engine but right for your particular boat?

The addition of a new model this year gives you three Ferro Four-Cycle engines to select from, covering a wide range of power and price.

For medium-duty, the Ferro All-Enclosed "Four" and "Six," with detachable heads, overhead valves, removable cylinder sleeves, mono-bloc casting and other unusual features.

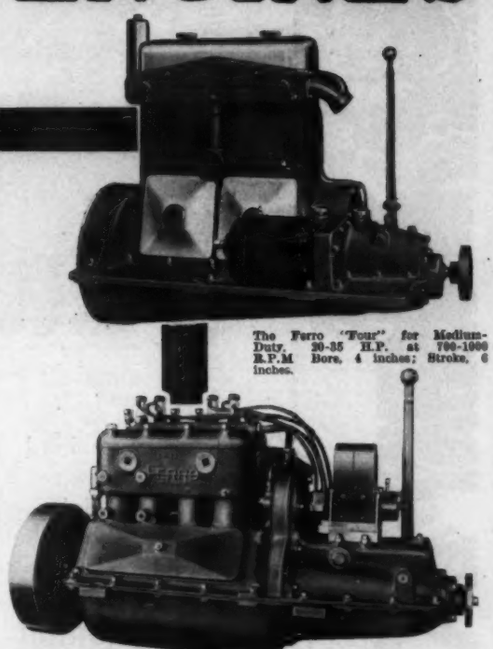
For fast, light boats, the smallest "Four," just out this year—a sturdy, compact, handsome engine. Write for Catalog No. 200.

Also 11 Two-Cycle Models

The Two-Cycle line runs from 3 H.P. to 25 H.P. and includes both gasoline and kerosene engines. Fully described in Catalog No. 227.

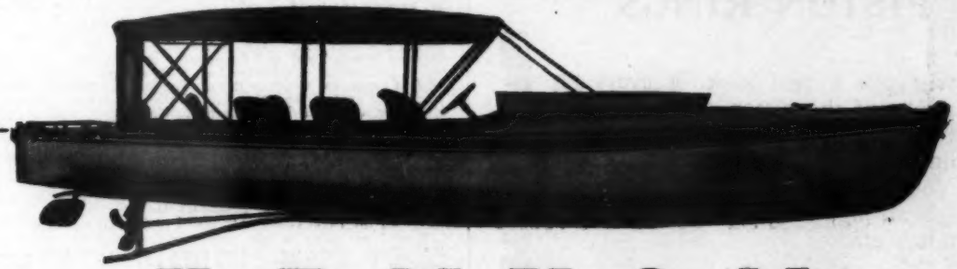
For smaller boats, the Ferro Detachable Rowboat Motor. If you're interested ask for Catalog No. 221.

THE FERRO MACHINE & FOUNDRY CO.
119 Hubbard Avenue, CLEVELAND, OHIO



The Ferro "Four" for Medium-Duty. 30-35 H.P. at 700-1000 R.P.M. Bore, 4 inches; Stroke, 6 inches.

The Ferro "Four" for Light Duty. 10-14 H.P. at 1000-1400 R.P.M. Bore 3¼ inches; Stroke, 4 inches.



K-E-N-Y-O-N

Still Means the Best in Boat Tops

The two big features that you will like about the KENYON Top, are its style and durability. Kenyon Tops and Cockpit Covers are made to order to fit your boat. Light, flexibly strong, waterproof material—rustless enamelled, steel tube frame—fold easily and quickly. One-man side curtain type.

Why experiment when you can be SURE?

KENYON Tops cost no more than the ordinary kind. If you own a boat, or expect to own one, you will enjoy reading the Kenyon Boat Top and Cushion catalog. Free on request.

Kenyon Cushions and Pillows

filled with Kapoc, stand for boat luxury. Kapoc is a silky vegetable fibre that comes from the South Sea Islands and retains its resiliency for years.

Kenyon Cushions and Pillows are light in weight, really handsome in appearance and are *real life preservers* in an emergency.

THE R. L. KENYON COMPANY

500 Meadow Street, Waukesha, Wis.

Power in a Pinch

FOR that long, hard pull against the current—in the teeth of a gale—fighting the tide—you need a power reserve to fall back on.

McQUAY-NORRIS

LEAK-PROOF

PISTON RINGS

will put a real kick in every stroke of the piston. They get the very last ounce of power out of every gallon of fuel. You can depend on your motor for strong, steady, sturdy top-notch effort.

Leak-Proof Piston Rings stop leaky compression—save fuel and oil — decrease carbon trouble.

Sold by all up-to-date supply houses, marine stores and repair shops.

FREE BOOK—"To Have and To Hold Power"—explains the secret of piston ring efficiency and why you should use only Leak-Proof Rings. Write Dept. B.

Manufactured by

McQUAY-NORRIS MFG. CO.

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Where Shall We Cruise Next Summer?

(Continued from page 9)

used as a girls' school, and across the way are the quaint and picturesque chapel and burial ground, while near the edge of the bluff overlooking the water is the monument erected by the State of Maryland, commemorating the first landing of Lord Baltimore.

The next morning right after breakfast we get under way, with the weather, as usual, warm and balmy. As we run out of St. Mary's we roll a little in a gentle swell coming in from the Bay. Looking into St. George's river as we go by we see it dotted with motor boats flying the Corinthian burgee, for this is a favorite rendezvous for Corinthians on their summer cruises to the lower river. Rounding St. George's Island we put Piney Point one point on our starboard bow and hold that course. Then we pass Ragged Point Light on our port hand, and let me tell you now before I forget it, that the harbor in Lower Machodoc is a good one; however, if you are going all the way in alone for the first time go slowly and keep your lead going.

But hold your course for the buoy off Higgins Point, for I want to take you to Leonardtown. Passing into Breton Bay we follow the channel carefully, make our several turns, and tie up to the wharf at this picturesque village. Here every one goes ashore to see the town. Climbing the hill will do us all good and you will be surprised to see the active little County seat. Here you can get anything you want but ice—I say but ice, because it has to be transported from a distance, and by the time it reaches you it costs one cent a pound. We won't stay here long, but will just run back around the turn and drop anchor in Paw Paw Harbor, opposite Abell's wharf. Deep water goes up to the bank, and the bluff is quite high, so some boats anchor in the shade of it from three o'clock on.

Near the eastern end of Paw Paw Harbor is a clean sand beach, where the entire party, children, women and all, can have a frolic in the water. A little to the west of this bathing beach is a bubbling spring known all about the country for its coolness and wholesomeness of water. You will consider it remarkable that the warm salt water of Breton Bay laps the beach only a few feet from this deep, cool spring. On the hill, at a farmhouse, milk, chickens, eggs and vegetables can be had, and across the bay at Abell's wharf is a general store where everything can be bought, including ice, but where news is unobtainable for love or money.

By this time I can see that you want a touch of real life. The quiet, hidden places are getting on your nerves, and just a taste of folly will set you all to rights again, so we shall weigh anchor early in the morning and run out about W x N for Colonial Beach. As we pass Cobb Point Light I'll show you the buildings on Rock Point, up on the Wicomico River, and on your way down the river you might run in there and fish. Many men from Washington go there every Sunday in their automobiles and fish with good luck. But we go eight miles across to the Virginia side to Colonial Beach, where we make fast to the lower wharf and walk ashore. It makes the cockles of your heart warm up a bit to see the pretty girls diving off the piles, swimming about and strolling up and down the beach. At two o'clock the daily steamer from Washington arrives, and as the hundreds of pleasure seekers stream off the boat and start down the boardwalk, a perfect Bedlam of noise breaks loose, with dinner bells ringing and fakirs hawking their wares.

The place is a little Coney Island for Washington's short term vacationists, and they most decidedly enjoy their outing. I have seen the time when there was a roulette wheel on every corner, with the bartenders working in shifts. It is different now, but yet interesting.

You might be tempted to stay at the wharf or drop anchor off it over night, but don't do so unless your boat is large and your anchor larger, for if an easterly or southeasterly starts it gets mighty rough and disagreeable. Many boats go around into Monroe Bay, behind Colonial Beach, but don't try it if you draw over three and a half feet. Others like Rozier's Creek, which is an excellent harbor, but difficult to enter. As long as we are going up the river anyway let us go into Upper Machodoc. The channel is narrow, but easily followed by using the chart and lead. After a turn or two we find ourselves nine miles from Colonial Beach, and as far from the world as we can get. Little points of land push out on every hand for the river to run around, and each point has a pretty little home and garden, with a small wharf and a boat made fast. Anchoring near Wood Island, out of the steamer channel, we shall enjoy a perfect night.

In the morning we row ashore, chatting awhile with the head of a little river home as he works over a log boat, and his wife fills our jar with rich, fresh milk. Then we leave the pretty little creek and push our way through a boiling tide at Lower Cedar Point, leaving the broad part of the Potomac for its narrow and more intimate upper half. In a little while you look surprisedly at me, your pilot, for as we come abreast of Mathias Point I do not put the helm to starboard, but continue about N x W, keeping one hundred yards off the Maryland shore and running over an unmarked channel nine feet deep right up to Chapel Point on Port Tobacco creek. Here every one can have another frolic on a good sand beach. The water is only brackish, and sea nettles are very rare. Just before dinner I will show you that by holding midway between Fourth Point and the opposite shore we can take the boat above Fourth Point into a land-locked, hill-hidden bay, with six feet of water over deep black mud. No need of an anchor watch in there. The motor tender can come into its own again, and be used to explore the upper part of this old stream that was once used by commerce, but has slowly filled in and been abandoned.

Next morning early we run out, and with a farewell wave at this particularly beautiful place, we go back to the main channel of the river. We have only to pass Uncle Sam's beacons and buoys correctly to get through without the slightest trouble. Rounding Maryland Point we can see the mouth of Potomac and Aqua creeks over on the Virginia side, both good harbors and fine fishing fields. As we pass the mouth of Mattawomen creek I warn you not to spend a night in that mosquito ridden creek if you can help it. Just beyond is Indian Head, the U. S. Navy proving ground, where all the naval cannon are tested under full charge and solid shot.

Here I am going to take you away from the main river once more, so I head for High Point, where the channel starts up to Occoquan, a village five miles from the river in Virginia. Watch your chart and course very carefully for there is only a rather narrow six-foot dredged channel. We leave Occoquan and Belmont bays, and with closed throttle proceed slowly up this rarely attractive creek. Just after passing under the railroad bridge we hold about midway of the stream, as from there up there are no aids to navigation. High, rocky bluffs, overgrown with rhododendron, overhang the water on the starboard side; a sloping hill runs into a point in the stream; the brick-kiln of the Work House comes into view and is passed to starboard, and then suddenly we see the little village nestled at the foot of high hills, with a mill and bridge marking the head of navigation. Every one goes ashore, for in the light of late afternoon I want to take you just above the little bridge to see a picturesque ruin of a cotton mill built over two hundred years ago and destroyed during the Civil War. Its thick, rugged, rough-hewn walls are overgrown with ivy, whose shaggy arms seem to be trying to protect it from further devastation. The spillway of a mill race roars and rushes through the ruin, then gaily laughs and sparkles as it emerges into the sunlight of the open and joins its parent waters in the creek. Then we climb up to the path by the mill race and follow it for a mile through a beautiful woodland valley, with tall cliffs rising high over the reflecting mill race, and here and there through the trees a glimpse of the creek tumbling among great boulders and beyond the cliffs of abandoned quarries. Returning to the village, you have only to look at the way the brick are laid to know that there is some truth in the tale that the village is the second settlement in Virginia. The following morning we leave the sheltered harbor and giving High Point plenty of room we either short-cut through the swash channel between Craney Island and the Virginia shore, or run over to the Maryland side and up the main and well marked channel. Marshall Hall, once a Colonial home, but now a summer pleasure resort, soon comes into view to starboard. Two miles further on I toll the bell, for we are passing under beautiful Mt. Vernon. A little more and we pass under the old stone walls of Fort Washington. Here we get our first glimpse of Washington, the Monument and the Capitol dome standing out clearly eleven miles away. Four miles above Alexandria we find ourselves at the "Forks of the Channel." To the right is the eastern branch, where is located the United States navy yard and gun factory. Ahead is Washington harbor, with the steamship piers and fish wharves, and the homes of the Capital and National Yacht Clubs. To the left is the Georgetown channel up the Potomac. Between the railroad and the highway bridges on the Virginia shore are the home and anchorage of the Corinthian Yacht Club. Further on we pass between Potomac Park, with its Lincoln Memorial on our starboard side, and Arlington, up on the hills of Virginia, to port. Then we stop or turn around at picturesque Georgetown, for this is as far as you can go on the Potomac.

[This is the first of a series of articles descriptive of cruising grounds which hold forth particular enticements to the motor boatman. The next article, which will be published in the February issue, will deal with the Lake Champlain district, and will be illuminated by charts reproduced to scale.—Editor.]

When you buy or build— plan on

Prest-O-Lite

For practical convenience, choose Prest-O-Lite. This reliable lighting system is unequaled for simplicity—unsurpassed in efficiency.

Costs very little to buy, and very little to use. Prest-O-Lite is by far the most inexpensive brilliant lighting system.

Prest-O-Lite is used on many of the finest boats in American waters.

For Any Size Boat

There is a convenient size of Prest-O-Lite for the smallest motor boat, for the largest pleasure craft. It can be used for all lights aboard. Oil lamps are easily converted into combination gas and oil lights at trifling cost, by using our Oil Lamp Adapter.

Cooking ashore or afloat, is simplified by using the Prest-O-Lite Auto Hot Plate, a compact cooking device. Employs Prest-O-Lite Dissolved Acetylene from the same cylinder, if you choose, that you use for lights.

Solves the Starting Problem on Power Boats

Priming with acetylene insures an immediate start for a cold engine, on the second or third quarter turn—even in zero weather. Costs very little, easily attached.

Before buying or building every boat enthusiast should have our free literature on Boat Lighting, Motor Priming and Camp Cooking. Ask for it.

The Prest-O-Lite Co., Inc.

The World's Largest Makers of Dissolved Acetylene

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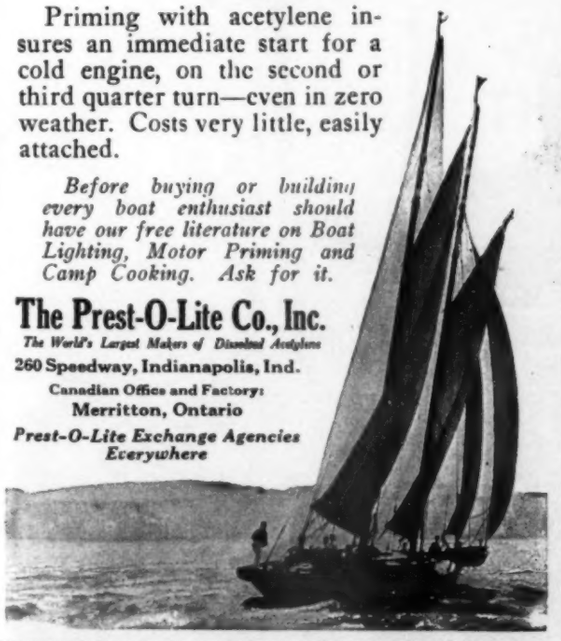
Prest-O-Lite Exchange Agencies Everywhere



"SANDS" SANITARY FIXTURES

The recognized standard all over the world among discriminating people. Guaranteed without reserve. Immediate shipment from stock.

The "Frisco." Plate S-2046
(Design Patented—Copyrighted)

The "FRISCO" PUMP WATER CLOSET, extra heavy Vitro-Adamant Oval Hopper Bowl. THREE (3) INCH combined supply and waste pump. All metal parts smoothed. Detachable N. P. metal handle with wood grip.

Plate S-2045 Polished oak seat, no cover $59.00
Plate S-2046 Polished oak seat, no cover 60.00

Dimensions: Width 24", front to back 21", height 17¼". Approximate weight: Net 80 lbs. Shipping 150 lbs.

"Iowa." Plate S-2040
(Patented—Copyrighted)

The "Iowa" Pump Water Closet has latest style Vitro-Adamant extra heavy oval flushing rim, straight back hopper bowl, fitted with 4" combined supply and waste pump.

Price with quartered oak, cabinet finish seat and cover, pump rough with polished trimmings $85.00
Price with mahogany seat and cover pump, white enameled. N. P. trimmings $97.50

Dimensions: 24" front to back, 22" wide, 17" high. Weight: Net 80 lbs. Shipping, 138 lbs.

"Knockabout." Plate S-34
(Patented—Copyrighted)

The "Knockabout" Improved Pump Water Closet, Vitro-Adamant round flushing rim bowl, 2½-in. combined supply and waste pump, "Sands" Patent Automatic Safety Supply Foot Valves, and "Sands" Patent Back-water Check Valve.

Pump rough, finished trimmings, oak seat and cover $49.00
Mahogany seat and cover, add 1.50

"Winner." Plate S-2061
(Patented—Copyrighted)

The "Winner" Pump Water Closet, Vitro-Adamant Round Hopper Bowl, oak seat, N. P. brass hinges, 2½-inch supply and waste pump, "Sands" Special quick opening supply valve.

Plate S-2060. Fixture as described with oak seat $19.00
Plate S-2061. Fixture as shown with oak seat and cover 20.00

Plate S-3183

The "Manatee 14" Vitro-Adamant, Flat Back Lavatory, with N. P. Basin Pump and waste fittings; no trap $22.75

Plate S-3180

The "Mosard" Lavatory, same as Plate S-3183, except with faucet, instead of pump and with N. P. Full "S" Trap $13.25

Plate S-126

The "Gleaner" Composition flat way sea cock for supply and discharge of closets and lavatories.

¾ inch $2.25
1 " 3.00
1½ " 4.00
1½ " 5.00
2 " 6.00
2½ " 12.00
3 " 18.00

Plate S-3190

The "Mono 12" Vitro-Adamant Corner Lavatory with N. P. Brass Pump and waste fittings and N. P. Full "S" Trap $24.50

Plate S-3196

The "Manco" Lavatory; same as Plate S-3190, except with faucet, instead of pump and without trap $9.25

Plate S-132½

Cast Bronze Combination Inlet Connection with Strainer and Scoop.

	I.P.	L.P.
½"	$2.25	$2.65
¾"	2.50	2.90
1"	3.00	3.40
1¼"	3.75	4.25
1½"	4.50	5.50

Plate 130¼-B

Cast Bronze Round Raised Strainer.

2½"	$0.35
3"	.50
4"	.65
5"	1.00
6"	1.50
7"	2.25
8"	3.00

Plate S-750-A

New Style Double-Acting Bilge Pump, with discharge and suction hose.

No. 1—Chamber 1¼ in. diam., 15 in. long $5.00
No. 2—Chamber 1½ in. diam., 15 in. long 6.50
No. 3—Chamber 2 in. diam., 24 in. long 14.00

Large Assortment of Closets, Lavatories, Deck Plates, Ventilators, Portlights, Basin and Galley Pumps, shown in CATALOG "R," free upon application.

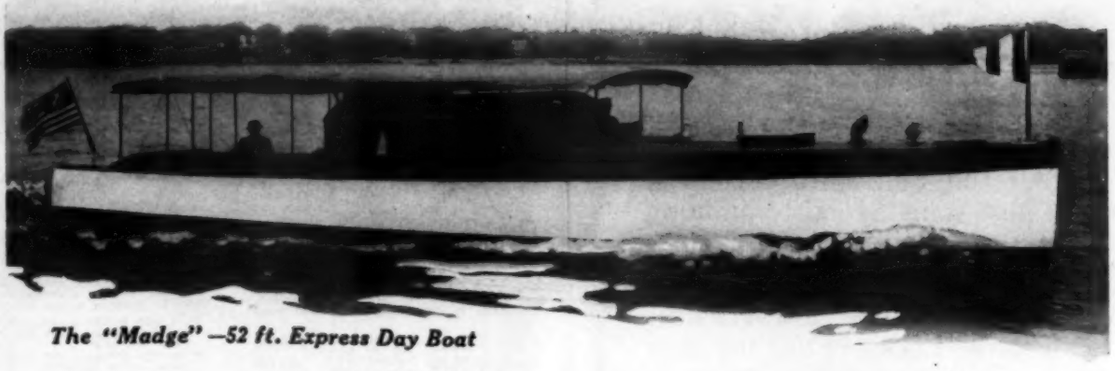
A.B. SANDS & SONS COMPANY

1849 "SIXTY-SEVEN YEARS OF QUALITY" 1916
LARGEST MANUFACTURERS IN THE WORLD OF

MARINE PLUMBING SPECIALTIES

22-24 VESEY STREET NEW YORK, U. S. A.

Speedway



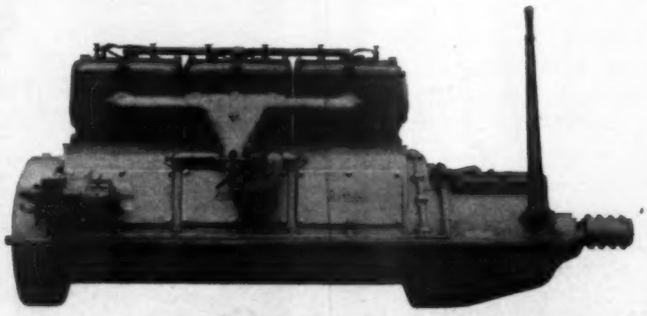
The "Madge" —52 ft. Express Day Boat

Exhibiting at the New York Motor Boat Show

OWING to the space limitations it is impossible to show with any degree of accuracy the wide scope of the "Speedway" line.

We will, however, exhibit some noteworthy examples of the latest "*Speedway*" achievements, including an advanced type of high class Yacht Tender, a modern Military Express Cruiser and four new model "Speedway" motors including

The Biggest Gasoline Marine Motor Built



A new 6-cylinder, 125-150 H.P. motor with a 5¾" bore and a 7" stroke. Weight 1800 lbs. 1000-1200 R.P.M. Quiet—accessible—clean and developing "a world of power."

Gas Engine & Power Company and Charles L. Seabury & Co., Consld.

Department A, Morris Heights, New York City

Motor Boat Insurance

WITH ordinary precaution, motor boating is one of the safest sports in the world. And one precaution that every motor boat owner should take is the installation of a thoroughly reliable reverse gear—a reverse gear that is not merely looked upon as an additional convenience, but a gear that is so designed and so constructed that it will *never* fail you in an emergency.

When you are operating your boat in a dense fog—when traveling in crowded waters—when exploring unknown channels—when making a difficult landing or when you suddenly run into any one of the various situations where quick action is necessary, a gear that can be absolutely relied upon becomes the best kind of accident insurance for your outfit.

Baldridge Reverse Gear

The Baldridge stands high in the estimation of motor boat men who know, because of its unfailing qualities and because it is always there, ready for business, when the most critical emergencies arise.

Years of actual service on thousands of motors have fully demonstrated Baldridge efficiency.

And the one big outstanding feature that immediately convinces the experienced boat owner is the fact that the Baldridge has but one mainshaft which extends through from bearing to bearing—it is impossible for it to sag or bind, and perfect alignment is permanently assured.

Strength is put where strength counts, and the Baldridge balanced gear cage has more than double the support usually found in reverse gears—it has double expansion clutches with reinforced reverse bands—gears heat treated and hardened by modern scientific methods—automatic lubrication and a housing covering every moving part.

You at least owe it to yourself to investigate why the Baldridge will make you the cheapest insurance policy for your outfit. Let us send you the Baldridge book today which will give you the inside facts about reverse gears and reverse gear construction.

"The gear with the unbroken main shaft"

THE BALDRIDGE GEAR CO.

238 Mt. Elliott Ave., Detroit, Mich.

Export Office

47 Broadway New York, U. S. A.

The Baldridge Reverse Gear is standard equipment on a large number of the leading American and European marine engines. When you select an engine, ask about the Baldridge. If it is not regularly furnished with the engine you buy, ask to have it included. You can have it, if you insist.

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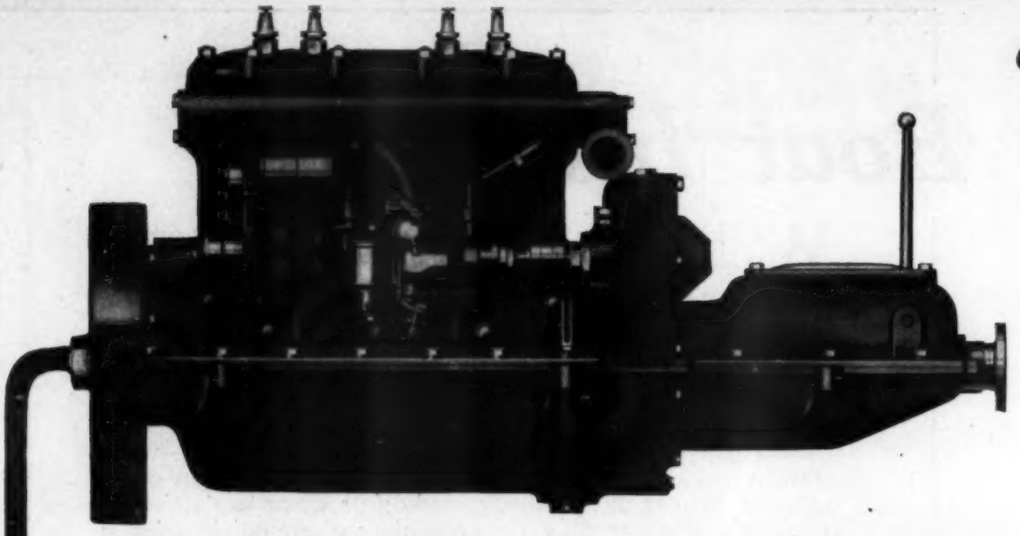


"D Jr."

Bore, 3 Inches
Stroke, 4 Inches
10-12 H.P.
4 Cyl., 4 Cycle

The Most Powerful Little Brute of a Four-Cycle Motor Ever Put on the Market

A Real Marine Motor at a Moderate Price. "D Jr." is not a left over product of some automobile or cycle car failure. It is a real marine motor—first—last—and always.

The boating public expects big things from the Gray Motor Company.

Last season the announcement of the Model "D" created a sensation among motor boat men. It was distinctly the greatest contribution to the marine motor field in many years—an instant success that increased tremendously in popularity as the season advanced, and the engine was seen in operation. It was an engine from which much was expected, and which made good in every test.

The very features of this new type four-cycle GRAY influenced boat owners to expect more from an engine than they had asked before.

Hence a growing demand all year long for a motor of smaller size that would duplicate the model "D" in ***quietness, cleanliness, smoothness*** and ***convenience*** of operation.

To satisfy this demand instructions to the Designing Department were: greatest possible power—least possible weight—extreme compactness and lowest possible cost of manufacture. The result is our new Model "D Jr."

Designed to stand up at highest speeds for a light boat indefinitely, or a large work boat or small cruiser for an unlimited period with absolute safety. Big bearings—very big bearings—large valves—high class material and a right design.

Space here is too limited to even begin a description of this new engine in detail. But here are a few points: ***bore 3 inches; stroke 4 inches; crank shaft 2⅛ inches in diameter; positive pressure oiling system through crank shaft; large hand-hole plates; silent chain, large valves; latest engineering practice in every detail.***

The Price

"D Jr." is a ***real marine motor*** with features that have never heretofore been incorporated in a marine engine which sold for less than a thousand dollars.

Like all Gray values, the price is by far the lowest ever established by a responsible marine motor manufacturer on an engine of its power and quality. ***Write for prices, details and descriptive circular.***

Big Catalog of 2- and 4-cycle motors from 3 to 50 Horse Power—FREE

GRAY MOTOR CO. 174 Gray Motor Building DETROIT, MICHIGAN

PARAGON
REVERSE GEARS

make boats safe for all your family.

Paragons have put motor boating on a *safe* basis. They're real insurance against accidents in crowded harbor waters.

By all means have *some* sort of a reverse gear on your motor. Examine them *all*. Then you can see for yourself the overwhelming superiority of the Paragon.

See us at the New York Show

Paragon Gear Works
Evans Stamping & Plating Co.
Cushman St., Taunton, Mass.

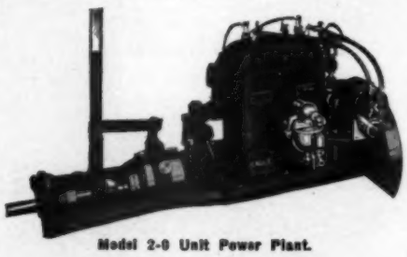
THE MIGHTY EAGLE

Universally conceded to be the most efficient and best line of Engines on the market

"EAGLE" ENGINES are the result of sixteen years of careful planning and careful building, they are the product of the best organized manufacturing plant in the world; there is more financial responsibility back of "EAGLE" Engines than all other make of two cycle engines combined. If you are ambitious to build up a permanent Engine business lose no time in securing an "EAGLE" agency.

Sensational Performances

The sensational performances of the entire line of "EAGLE" High Speed Models during 1914-1915 is without a parallel. If you want a Winner buy an "EAGLE," as it takes an "EAGLE" to beat an "EAGLE."



Model 2-0 Unit Power Plant.

MOTOR BOATING

The Model 2 "O" stock model as illustrated above holds the world's record for speed in its class. It is equally as efficient in pleasure and working boats. Its range of work is not approached by any two cycle Engine. Its price is exceptionally reasonable. It has that Dollar for Dollar value. Each and every part used in the construction of an "EAGLE" Engine is made to our order, and special formula. No stock parts are good enough for our Engines. Repair parts can always be had for any "EAGLE" Engine made during the past sixteen years (a record). Our Medium Speed and Heavy Duty line is exceptionally complete.

Catalogues mailed upon request.

THE STANDARD CO.

TORRINGTON, CONN.

Testimonial Letters

The Standard Co., Torrington, Conn.
Gentlemen: The Model K 3½ H.P. engine No. 5291 shipped us some months ago is doing all you claim for it and then some. We sold it to one of our fishermen, he has been using it constantly, towing two large skiff boats and there is nothing in this water that gives any more satisfaction. You can hardly improve on this special model for the money.
Homosassa, Fla., 10-28-15. Very truly yours, **THE WILLIAMS FISH CO.**

The Standard Co., Torrington, Conn.
Gentlemen: I have owned and operated one of your Model 2K 7 H.P. Marine Engines for the past year. With my 20 in. x 4 ft. Semi-speed hull and this motor I had an ideal combination both for comfort and economy.
I had the fastest boat on these waters for her H.P. and I think her builder, Mr. F. B. Swenson, Covington, Ky., will favor you with more than one order this coming season.
Cincinnati, Ohio, 1-20-15. Very truly yours, **MR. F. L. CROSS.**

The Standard Co., Torrington, Conn.
Gentlemen: I received the motor with the corresponding accessories and after installing it in the launch I tried it with satisfactory results. It could not work any better than it does. Those who saw it doubt it had 7 H.P., as the size does not seem in proportion with the power, but I am convinced that it develops 7 H.P. and the owner of the engine is satisfied with it, and besides, they do not take into consideration that it is not only the size, but the number of revolutions that counts. They only say that a 3 H.P. engine is large, but do not understand that such an engine works only 300 revolutions per minute and this 900 to 1000 per minute. I have gone out with it and the owner five or six times and he tells me it consumes little gasoline.
Menzanillo, Cuba, 12-25-14. Very truly yours, **MR. HELIODORO GUERRA.**

The Standard Co., Torrington, Conn.
Gentlemen: The engine purchased from you last spring has proven to be all that you claim. It drove my 19 ft. runabout last year with a 14 by 18 Hyde 3 blade, 8 M.P.H., which I am proud of. The engine raced so much that this year I have put on a 14 by 22 three blade Hyde. That single model "0" is one corker.
39 Marshall St., Medford, Mass., 5-20-14. Yours truly, **MR. E. S. BENJAMIN.**

The Standard Co., Torrington, Conn.
Gentlemen: Your Model 2-0 12 H.P. engine is giving perfect satisfaction. It is one of the most perfect engines I have ever operated. I don't know of any improvment you can make. It is just perfect in every way. There isn't any speed engine on the market that can produce the power that your engine will. I have one of the fastest speed boats in the world with one of your 12 H.P. 2-0 engines installed in it. I think you people claim that the "Flying Eagle" is the fastest, but you are entirely mistaken. I have written you people I had a very fast boat. Before I won the Cup at Ocracoke Fourth of July, I was also second winner at New Bern in a Handicap Race. One of the "Flying Eagle" boats was in that race. I outran her eight minutes, so you see that was not any comparison. My boat is 18 feet long, 3 feet beam. I am sending a postcard of boat.
If I can be of any service to you people, I will be glad to serve you.
Atlantic, N. C., 10-29-15. Very truly yours, **MR. J. J. HILL, JR.**

The Standard Co., Torrington, Conn.
Gentlemen: I received your letter on the 28th, many thanks for the information re. grease.
My boat is a Defoe model 19 x 4 ft. 9 in. x about 18 in.-20 in. draft, built of ½ in. cypress with oak ribs, and five years old. My speed is 11¼ M.P.H. at 1000 R.P.M. with a 3 blade 12 in. x 18 in. Hyde wheel, and last time I put a counter on the engine she was doing 1007 R.P.M. A 10 gallon gas tank is carried in the bow, and the engine is almost amidships.
The silencer is a Maxim run wet, and the engine is absolutely inaudible 10 ft. away, plugs are extra long Spitfires and the coil your regular Thordarson, which I have only had to touch once (about a couple of months ago) since it was bought two seasons ago. No appreciable wear is visible in any part of the engine, except the pump eccentric strap which I had to take up about 1½ turns just before hauling up this year.
In conclusion I may say that if I were to put another engine in the boat it would be a 2 "0" Eagle.
Hoping that the above information may be of use to you, I remain,
Hartford, Conn., 12-2-14. Very truly yours, **MR. A. ALLISON.**

The Standard Co., Torrington, Conn.
Gentlemen: Mr. H. L. Curren, Lexington, Mass., Box 57, has requested a very extensive testimonial as to the merits of an Eagle Model 2K. This motor was bought for me through Dr. O'Hara and it may please you to know that I have recommended this motor to Mr. Curren in the very highest terms possible. I am thankful for the opportunity to repay the Eagle Co., for its past favors and also to recommend the only engine out of five trials that ever satisfied me.
My first Eagle I purchased through Bruns, Kimball & Co. Dr. O'Hara purchased my second through you. Both were entirely satisfactory. Please feel at liberty to refer prospective customers to me at any time and when my boat is in commission at Lake Quassipaug will be glad to show what a good motor can do.
Waterbury, Conn., Box 584, 1-20-15. Very truly yours, **MR. W. F. CAIRNS**

The Standard Co., Torrington, Conn.
Gentlemen: I am the owner of a 2 cylinder Eagle 7 H.P. high speed type. If you ever use testimonials in your advertising the following may be of some use to you. I installed a 7 H.P. 2 cylinder high speed Eagle last year in a 20 ft. x 4 ft. 6 in. runabout. This boat has half inch flanking and is not a freak. In the Yachts Club races last year I was fourth in the races for speed boats, being beaten only about two minutes by three boats ranging in power from fifteen to twenty horse power. The engine turned a 12 in. x 18 in. 3 blade Hyde wheel 1075 R.P.M. My boat did five miles in twenty-two minutes last year. The first year it has run. I think the "Eagle" for bore and stroke is the most powerful engine I have ever run. Very truly yours, **MR. CLINTON H. MOORE.**
90 Western Ave., Augusta, Me., 5-11-15.

The Standard Co., Torrington, Conn.
Gentlemen: I would like to say a word in praise of the Model 2K which I purchased from you last spring, through Myrick & Co., Tignish, your agent. It is installed in a 13 ft. Bumble Bee Hydro. I am sending you a snap showing you what an Eagle is doing for me. Although not to be compared with your 12 H.P. boats, mine makes a speed of 13½ good honest Canadian miles per hour, and I consider that very good for seven horse power, quite enough to beat some so-called fifteen knotters.
The propeller used was 12 in. diameter by 18 in. pitch, 2 blade model E Columbian. The motor turned this week at 940 to 950 R.P.M., with two in the boat making about 12½ miles. With one person in and the boat doing her best, 13½ miles. I never tested the engine, but I think it must turn over 1000 R.P.M.
I have overhauled the engine and found it in first class order after its season's work. We have many motor boats here, but I have the only Eagle, that is at present. Very truly yours,
MR. MALCOLM IRWIN.
13 Richmond St., Charlottetown, Prince Edward Island, 12-20-14.

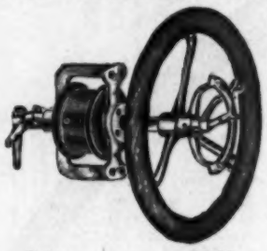
E. J. Willis Co.

85 CHAMBERS STREET NEW YORK

The Most Complete Motor Boat Supply House

Complete Catalog "B" of Motor Boat Supplies Mailed FREE

NEW "EUREKA" STEERER



Price $6.49

BEMUS BALL CONTACT TIMERS

1 Cyl., $2.50; 2 Cyl., $2.75; 4 Cyl., $3.25

"MITCHELL" COLLAPSIBLE SEAT

Entirely New, Piano Finish, Extra Strong Spar, Coated, Guaranteed.

Diam., 11"; Pol. Oak, $2.25

WILCO EXHAUST COVER

Pol. Brass..$1.50

ELECTRIC SWITCH

3 Pull..$1.13
2 Pull.. .75
1 Pull.. .38

WILCO CURTAIN FASTENER

Single, per Doz., $0.49; Double, per Doz., $0.69

FENDER HOOK

Pol. Brass, Ea., $0.12

WILCO LAVATORY

Complete $7.75

EVEREADY DRY CELL CASE

Closed Open

6 Cell Case.....$0.98

COMBINATION LOCK

All Bronze..$0.65

ELECTRIC SEARCHLIGHT

8½ In. Front...$7.50

Mr. Motor Boat Owner:

Have we ever had the pleasure of supplying you with the fittings for your Motor Boat?

We are the originators of CUT-RATE PRICES in marine and fishing tackle supplies, and by glancing over our complete CUT - RATE CATALOGS "B" and "G," which we will send you free upon request, you will be convinced that our prices are right.

The new parcel-post system coupled with our cut-rate prices, makes buying by mail economical and satisfactory.

GIVE US A TRIAL ORDER.

We guarantee every article we sell and refund the amount paid if not found as represented.

We are leading dealers in Automobile Supplies, also Motor Cycle and Bicycle requisites, and will mail catalogs on request.

Yours very truly,

E. J. WILLIS CO.

85 Chambers St., New York.

Established 20 years.

JEWELED CENTRE STOP NEEDLE POCKET COMPASS

Price $0.98

S-M BAROMETER

Price $6.98

ELECTRIC CLASS 1 LIGHT

6 Volt, 6 C.P., $4.95

VOLT AND AMMETERS

Ammeter, 15-0-15, $1.50
Volt-meter, 15-0-15 $1.50

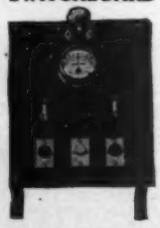
SPECIAL LIGHTING BATTERIES

6 Volt, 60 Amp.....$9.50

ELECTRIC LIGHT FIXTURE

6 V., 6 C.P..$1.75

WILCO MOTOR BOAT SWITCHBOARD



Price $8.95

ELECTRIC PULL SWITCH FIXTURE

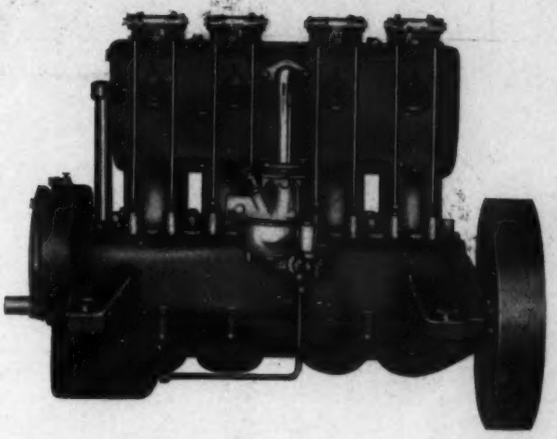
6 V., 6 C.P..$1.75

EUREKA LIGHTING GENERATOR WITH AUTOMATIC CUT OUT

Capacity 35 C.P.....$22.50

$150-MORTON-$150

4 Cylinder 4 Cycle



3½x4

16 H.P.

High tension Dual Magneto Equipment

$35.00

There are thousands of forms of advertising, but the enthusiastic word-of-mouth boost from the satisfied user weighs more than a barrel of printers' ink.

Owners of many marine engines damn them with faint praise.

During 1915, less than $100 has been spent in advertising the $150—MORTON—$150 motor—but boosting owners have sent us a very satisfactory volume of business.

No one has a monopoly on the knowledge of how to design a gasoline engine—any one of several thousand engineers can turn the trick.

BUT, the production of a self-selling engine requires manufacturing experience plus enough horse sense to recognize the fact that good workmanship pays.

For years our factory has made crank shafts and cam shafts for the automobile trade.

The manufacturers of Hupmobile, Chevrolet, Cole, and other high-grade motor cars may be trusted to see to it that they are not short-changed on workmanship.

The same painstaking attention is given to every detail of construction in the $150—MORTON—$150 motor as is applied to the best automobile ever made.

In short, we know how to make marine motors, and we flatter ourselves that we have brains enough to know that making them right is water on our wheel.

A marine engine is unlike a spring bonnet—the design does not necessarily have to be changed each year.

In machinery, changes without improvements are mere "bunc."

There has, however, in recent years been one vitally important improvement made in gas engine design, *i.e.*, overhead valve construction.

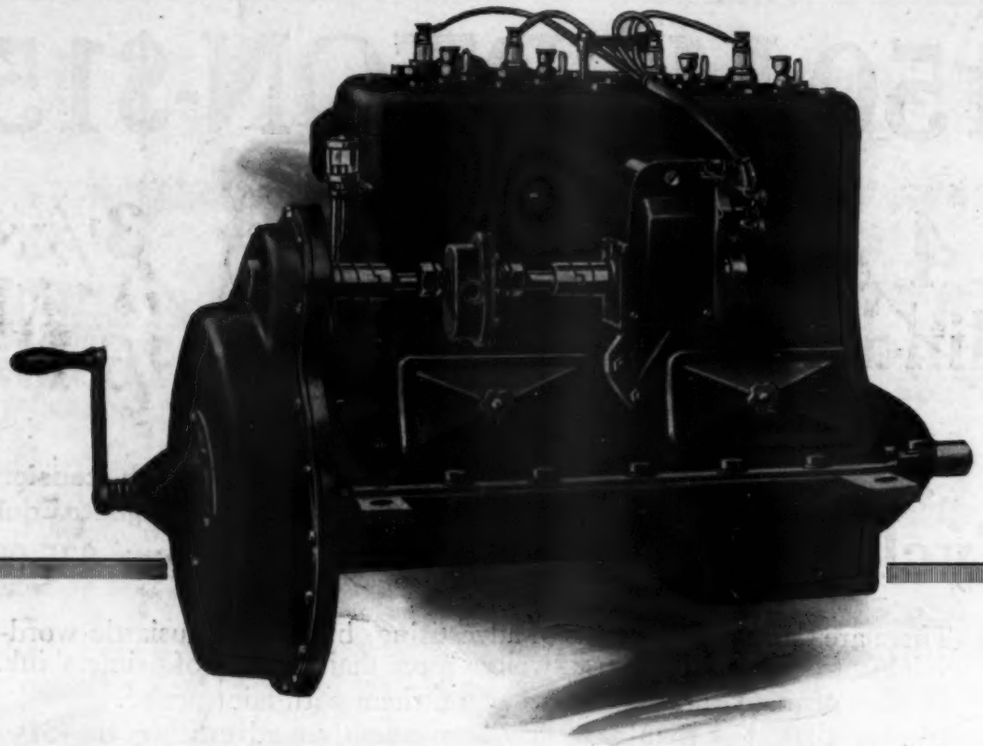
It gives 15% more power for the same bore and stroke than is possible with side-valve construction.

This improvement is incorporated in the 1916 model of the $150—MORTON—$150 motor.

We KNOW that this motor is the most high-grade, clean-cut, carefully-manufactured, up-to-the-second piece of machinery ever offered to motorboat users.

It develops 16 actual brake horsepower at 1,000 R.P.M.

MORTON MOTOR COMPANY, 46 EAST LAFAYETTE AVE. DETROIT, MICH.



The New MOTORGO Four Cycle

An All-Enclosed Engine of the Latest Up-to-Date Construction

If you have a pleasure or speed boat which you think deserves the best little power plant you can buy for it, give this new MOTORGO four cycle engine a critical and searching examination that will bring out all its good points. We believe it is without question the best design that has ever been developed in a marine motor of this size and are confident you will find it just the power you want for your boat.

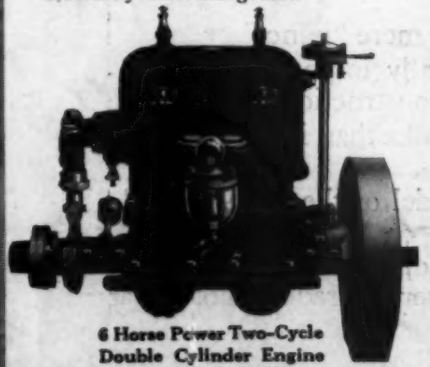
Every moving part is enclosed, insuring the utmost cleanliness and quietness. The unit casting means compactness, endurance, strength and freedom from vibration. The big side plates make the crank case and bearings most accessible. Cylinder head is removable. Lubrication is by splash with plunger pump forcing oil to all bearings.

The complete and high grade equipment supplied with this engine includes high tension magneto, Schebler carburetor and rotary water pump. Speed range is from 200 to 1500 R.P.M. with its normal rating of 14 H.P. easily developed at 750 R.P.M. Bore 3¾ in., stroke 4½ in. Weight complete is only 385 lbs.

Write us at once for full specifications and price on this new MOTORGO Four Cycle

Motorgo Two-Cycle Engines

Motorgo Two-Cycle Engines have been in use for over ten years and have demonstrated their superiority over other engines costing even double their price. The best material is used in their construction; the workmanship is high-grade in every respect. All parts are accurately machined and are absolutely interchangeable.



6 Horse Power Two-Cycle Double Cylinder Engine

$79.95 with Schebler Carbureter and full Fresh Water Equipped.

These engines are built in several single and double cylinder models from 2½ to 8 H.P., and priced from $36.95 to $94.75 including full engine equipment.

Motorgo Row Boat Engines are supplied with jump spark ignition or with magneto built in the flywheel as a part of the engine, and are guaranteed equal to any similar rowboat engine on the market. Our Inboard Canoe or Row Boat Engines are built in single and double cylinder models of 2 and 4 H.P. respectively.

The service you get from a boat engine depends on the design of the engine, the material used in its construction and the way it is made. You will be more than satisfied with the service you get from any Motorgo Engine you buy for we have put into them only the highest quality of design, material and workmanship.

Write today for our catalog [90M75 of Motorgo] Engines, Reverse Gears and Equipment

Motorgo Row Boat Engine

$38.50 Complete with Battery Equipment.

Sears, Roebuck and Co., Chicago, Illinois

Still Another! The Fay & Bowen Drives 'Em!

"WANGUNDIN"

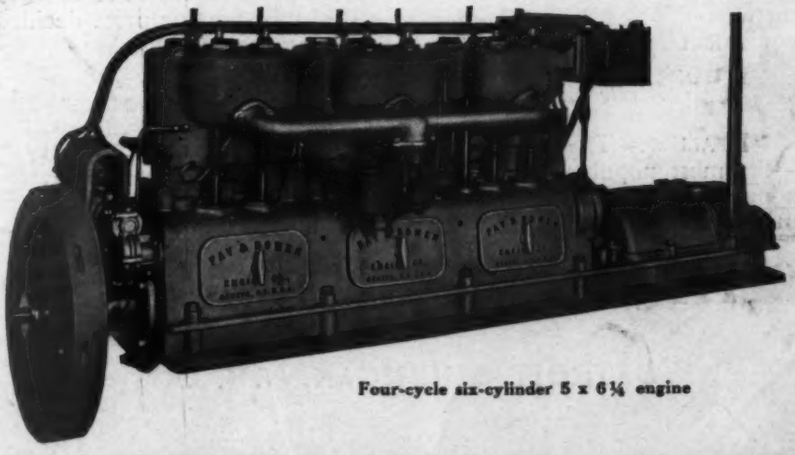
Owned by Mr. Wm. L. Supplee, of Philadelphia, making 28 miles per hour on Lake Placid. "WANGUNDIN" is powered with the FAY & BOWEN "BIG SIX"

Reliable, powerful, quiet, with its extra long water-jacket, oil tight clutch case, force feed lubrication, Bosch magneto and complete equipment, the Fay & Bowen is the ideal power.

Ask us for our literature and the names of some of those who are using Fay & Bowen engines.

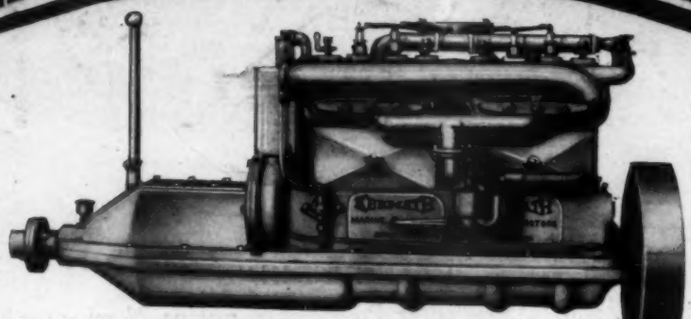
FAY & BOWEN ENGINE CO., 104 Lake St., Geneva, N. Y., U. S. A.
Made for Canada by the ST. LAWRENCE ENGINE CO., Ltd., Brockville, Ont.

FAY & BOWEN "BIG SIX"



Four-cycle six-cylinder 5 x 6¼ engine

16 H.P. KERMATH $215.



"They are so much better"

Our Customers Demanded This New Model

We had to concede it. The 12 and 20 H.P. Kermaths had won so many friends that many of our customers requested a new model intermediate between the two. The 16 H.P. illustrated above supplies the demand.

This engine has 3¾ x 4" bore and stroke, as compared with 3½ x 4" in the Kermath 12. The 16 H.P. which it is rated is easily developed at 800 R.P.M., the speed ranging from 600 to 1200 R.P.M. Cylinders are cast in pairs, bearings liberal in size, every part carefully made and finished. Except in dimensions and sizes of parts, the design is identical with our well-known 12 H.P.

With the Kermath 12 at $180, the new 16 at $215, and the Kermath 20 at $280, various equipment outfits adding different amounts to these prices, you can buy a four cylinder four cycle engine of genuine stability, good fuel economy and great smoothness of operation at a price you would expect to pay for an unsatisfactory two cycle motor. There is no room for comparison in the service value of the two types. And there is no comparison in price between the Kermath and other four cycle motors of equivalent specifications.

"How can you do it?" many of our customers have asked us. It took the automobile business to show the reason for manufacturing economy so clearly, although the principle was well established long before. It is simply this—the construction of Kermath Engines has been "standardized" down to the last detail. Automatic machinery, reasonable quantity production and up-to-date methods have cut the cost so that we can afford to make our price decidedly attractive without affecting the quality.

Write today for complete illustrated catalog.

DEALERS:—There is big money for you in the Kermath agency—the most popular sizes of the most popular type, at the most popular prices. Write or wire us today for details of our agency proposition.

KERMATH MANUFACTURING COMPANY

DEPT. 2

DETROIT, MICHIGAN, U. S. A.

V
17
1
J
A
N